INTERNATIONAL GEOGRAPHICAL HISTORY OF THE WORLD

EDITORS - IN - CHIEF

DR. J. E. WOODMAN, NEW YORK UNIVERSITY
ADMIRAL ROBERT E. PEARY, U. S. NAVY

WORLD FLAT-GLOBE CORPORATION

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THE WORLD FLAT-GLOBE

AND

INTERNATIONAL GEOGRAPHICAL HISTORY OF THE WORLD

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PUBLISHER'S STATEMENT

The World Flat-Globe and International Geographical History (two parts) comprise together a new and wonderfully convenient twentieth-century system of world-wide and international review and reference. Each is necessary to the intelligent and satisfactory use of the other. They are complete, up-to-the-minute, concise and exhaustive and leave nothing to be desired in reviewing past history and following current events. They have been most carefully prepared and edited by the master minds of the geographical world.

The Flat-Globe pictures the entire earth's surface at a glance —all lands and waters, in proper size, proportion and relation, as maps, atlases and charts cannot do. The History explains and describes all the forces and movements of Nature and man's activities and pursuits upon the earth from the earliest records to his wonderful and varied achievements of today; through the slow movements of his conquest of Nature, the annihilation of time and distance in intercommunication and transportation, and his progress in social and governmental life, as well as the production and distribution of products of the soil, mines and sea, and in the multitude of industries he has developed and organized and the national and international financial systems necessary to their successful prosecution.

The following chapters tell the story of the ages in clear and simple form, more interesting and fascinating than any romance or novel. Man's thousands of years of continuous mental effort and physical labor, and the expenditure of untold wealth, have produced the conditions of human life of today.

The reading of this story gives the "wide horizon's broader view" and is an education in itself for every man, woman and child.

The Flat-Globe and History are offered at a price so low as to be within the easy reach of everyone. Every place of learning, home, office and place of business can now have a beautiful large World-Globe and complete International Geographical History. They are pronounced by the leading minds best qualified to judge, the greatest production of intelligence the world has ever seen at the price.

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INTRODUCTION

PRACTICAL FACTS ABOUT THE RECONSTRUCTED WORLD

This International Geographical History of the Reconstructed World, with its accompanying Flat-Globe, has the epoch-making distinction of being the first work by American geographers, cartographers and economists, to follow the Treaty of Versailles and the close of the Great War. The purpose of this Introduction is to present in concise form the practical facts concerning "the world in which we live," with outlines of the geographical and political changes that have been created by the World War.

The Reconstructed World—The human race in its seven thousand years of recorded development has passed through three great epochs. Geologists find that the age of the earth is millions of years, but the activities of mankind cover a comparatively brief space. We, who live in the world today, are witnessing the birth of a new era; we are, in fact, laying the foundations for the building of a new age of human progress—the fourth great epoch.

The close of the World War definitely marks the beginning of this new epoch. It witnesses the collapse of old systems, and upon its ruins we are to erect new groups of nations, with new political alignments (as shown on the Flat-Globe), with new economic standards, new sociological ideals, new spiritual realizations. This is a new age in every phase of human progress, and is marked among other manifestations by great scientific discoveries. The first of these epochal changes is indicated by the rapid development of aerial navigation and wireless communication, in which time and space are almost annihilated.

At the beginning of this Fourth Epoch, nearly two billion human beings walk the earth. The possibilities in human advancement are incalculable. It is generally agreed by scientists that man has hardly begun to solve the problems of existence; for each

discovery that he has made there are innumerable more to be revealed.

There never has been a time when there were so many opportunities in the world. Opportunities are procreative and increase with time; each opportunity creates thousands of new opportunities. Every new invention and every increase in intelligence develops multitudes of new possibilities, which in turn create new fortunes for the individual—and thus increase the wealth of the world. Man has not yet begun to realize the powers within himself and within his reach. The problems of human freedom, economic emancipation, higher moral concepts, truer sense of equity and justice, are matters of expanding intelligence which are brought about by scientific discoveries that improve or revolutionize the mode of life.

Geographical knowledge is the foundation of a real and full education. It is the first step in all progress. It is the measurement by which we calculate each new step in the world's development. It is, in fact, the guide by which the individual reaches his decisions and formulates his plans. We first begin with the town in which we live, then the state, then the nation; and finally extend our operations into the world-at-large. It is this knowledge, therefore, which is absolutely essential in the organization and development of every business enterprise. It is the guide to the world's markets. It is the chart for the expansion of all trade. No individual today can succeed in any line of endeavor without a practical knowledge of the conditions which surround him—the various groups of peoples, their customs, habits and needs.

It may be stated as a fundamental fact that the key to success is an adequate knowledge of the world in which we live. With this as a starting-point, there is no limitation. It is the service of this volume to present the fundamental facts which may be utilized by every person in whatever position in life or occupation he may be engaged—to give him a practical working knowledge, upon which he can plan and develop his own work in the world.

SEVEN THOUSAND YEARS OF WORLD DEVELOPMENT

Let us observe briefly the progressive steps by which we have reached the position in which we find ourselves today. Who built the foundations upon which we are living? How were those foundations laid? How long has it taken? What were the experiences of those who preceded us? What were the causes of their successes or failures?

When we consider that the world as it stands today is the work of many hundreds of generations of men, when we weigh the tremendous difficulties they met and overcame and the problems that confronted each generation, then we begin to realize the amount of work that has been put into what we call civilization.

Seventy centuries ago the world was an unknown quantity. It was a mass of raw materials, without plan or purpose as far as human knowledge was concerned. During all this time men have been laboring daily to penetrate its mysteries, clear up its jungle-lands, discover its secret resources, find its rivers, scale and tunnel its mountains, cross its bays and gulfs and oceans. And yet, locked within this old earth were all the riches of the ages, unfathomable wealth which has been revealed slowly by hard, intelligent effort, until today it stands revealed as inexhaustible, its possibilities increasing with each year. One hundred billions of workers have come and gone in this great enterprise of developing the earth and constructing the world in which we live and work today. What a stupendous task this revelation of the world's secrets has been: what a tribute to the diligence, the unconquerable faith, the indefatigable energy and industry of men; and what a realization of the creative forces behind it—the infinite intelligence which constructed it—and keeps it in operation.

The area of the earth is estimated at nearly 197,000,000 square miles (as shown in chapters to follow). It has been necessary for men to work their way through this vast area, step by step, revealing its possibilities, charting its paths, opening up its channels, erecting landmarks, felling forests, making the wilderness inhabitable and bringing it into utility—until today it is all within the reach of the present generation—and at our service.

The beginning of this gigantic enterprise is unknown. It starts somewhere in remote antiquity, when man was in the Paleolithic age. The theories of his slow process of material evolution is a matter of investigation by anthropologists and ethnologists, while his higher spiritual creation and unfoldment is defined by theologians and metaphysicians. It remains for the geographer to trace the exploration and discovery of the world's surface, and for the historian to follow the events that have occurred while the human family has been leaving written records of the progress of mankind since civilization was in its infancy.

RAPID SURVEY OF THREE EPOCHS OF HUMAN PROGRESS

This record, as has been stated, is generally divided into epochs: First Epoch—Ancient; Second Epoch—Mediaeval; Third Epoch—Modern; Fourth Epoch, the new era beginning with the World War. (1) Ancient History begins about 5000 B.C., with the first appearance of historic records, leading up to the birth of Christ, and ending with the fall of the Western Roman Empire 476 A.D. (2) Mediaeval History, or the history of the Middle Ages, extends from the fall of Rome 476 A.D. to the Discovery of America in 1492. (3) Modern History embraces the period from the Discovery of America, 1492, to the close of the World War, 1919. These are foundations upon which we are now building the New Age—the Fourth Epoch with its proposed League of Nations.

Man's origin was in the east. He has since worked continually westward, until he has encircled the globe, and dominates the lands from pole to pole; and the most western and newest nations have risen highest in the scale of civilization.

The dawn of what we know as civilization came from the old Babylonian, Chaldean, Assyrian and Egyptian empires with their past glory. Here, in its setting of Oriental grandeur, the world's drama lifted its curtain, revealing the rise of humble peoples into powerful nations; to reign supreme until luxury, wealth and leisure undermined the foundations of society; finally to fall into decadence and collapse. Here, in the beginning of recorded

events, we find mankind emerging from tribes into races and nations. Out of the dimness of the Stone Age, we see him awakened by moral and spiritual intelligence, feeling the necessity of social and economic organization, and formulating communities of common interest for the purpose of mutual protection. This is the first and fundamental purpose of all Government.

The peoples of all nations today, and especially their statesmen and lawmakers, may well read the handwriting on the wall in the records of those who went before us, who struggled with the same problems of wealth and poverty, capital and labor, autocracy and democracy. The value of knowledge is in its human experience, in its demonstration of the causes and effects of the success or failure of individuals and of nations.

"BIRD'S EYE VIEW" OF THE WESTWARD MOVEMENT OF CIVILIZATION

First Epoch (5000 B.C.–476 A.D.). On the Western Coast of Asia we find the first of the great civilizations: Babylonia, a powerful Semitic nation, "builders of cities, the possessors of a great literature in clay, learned in mathematics and the heavens." Babylonians were followed by Assyrians on the north, who established a world empire in their little domain, only to make way for Chaldea, "in turn to be succeeded by a Neo-Babylonian kingdom, in turn to be succeeded by Persia," and the empire of Alexander and Greece, finally to pass on to Rome, whither "all roads lead." Ancient Egypt, with its Memphis and its Thebes; with its pyramids and its science; with its agriculture and its commerce —what a mighty human force it exerted!

We cannot linger in this First Epoch, except to view the struggles of these early empires, the difficulty which mankind has always experienced in establishing and maintaining a fixed form of government. The Assyrians, the Phoenicians and the Hebrews, all wise and powerful peoples, came and went the way of their predecessors. For the first time in history (1125 B.C.) we have great states in relation of war and peace with one another. This is the beginning of diplomacy and world politics. In this epoch many nations rose and fell, their places being taken by more

advanced states. Strong men strove—statesmen, soldiers, scientists, holy men; and their impress has been left upon human society for all time.

Second Epoch (476 A.D.–1492 A.D.). In this rapid survey of the progress of mankind, we can linger but a moment to witness the steady Western pilgrimage. Slowly, man has pushed forward toward the setting sun—blazing a new path and erecting great cities to mark his progress.

The Byzantine empire, in its mediaeval splendor, existed for a thousand years. New races and new nations came into existence and joined the westward movement. The Romans and Teutons, Franks, Burgundians and Goths; the English, Saxons and Celts; the Normans and Jutes.

Great peoples and nations arose: Italy and France and Spain; England and Germany, Poland and Russia. We see the foundations laid for the Holy Roman Empire; we witness the Mongol invasions; we go on the Crusades. These are the days of knighthood, chivalry, feudalism, the Truce of God, with the struggle between Church and State.

It was an epoch too, of strong men. It was a time of great geographical and astronomical discoveries. The invention of gunpowder and the printing press hastened the transition from the Middle Ages to modern times. And then came the greatest event in all the geographical discoveries of men—the Discovery of a New World—America—and the beginning of a new epoch.

Third Epoch (1492–1919 A.D.). The greatest enterprise in the achievements of men, as we have noted, is the Discovery of America—the event which created a new or Third Epoch for the world's progress. This—the age of Great Discoveries, great inventions which were to revolutionize the world, furnish great achievements, and mark the beginning of the emancipation of the world through the development of political liberty and Democracy.

It is necessary at this time merely to indicate the general trend of conditions in Europe, the establishment of the nations, their wars and revolutions, their political, economic and intellectual advancement through many crises and bloody struggles. There was the Franco-Spanish struggle for supremacy and the invasions of Italy; the Spanish ascendancy in Western Europe; the Thirty Years' War and the decline of Spain; the French Ascendancy;

the House of Romanoff on the Russian throne; the Ottoman Empire; the trials of Prussia and the age of Frederick the Great; the French revolutions; the rise of the British Empire; the steady development of the German Empire—all gathering in momentous rivalry until it reached its climax with Germany's attempt to dominate Europe in the World War, which in itself was to create a new epoch.

The rise of the American race to a position of world leadership, is the most important event in the Third Epoch. The settlement of America; its colonization by the Spanish, French, Dutch and English; the establishment of new nations in North and South America, until the Western Hemisphere has become the seat of the world's most advanced progress,—these are a part of our everyday knowledge. Today the American republics and the great Dominion of Canada hold the foremost position in world progress.

IMPORTANT FACTS REGARDING WORLD WAR (1914–1918)

In concluding this Introduction, with its rapid glance at the movement of human progress, it is interesting to note a few facts regarding the World War. This war, which brought America into supremacy as a world power, was the result of cumulative rivalries of European nations. It was caused directly by the attempt of the German Empire to dominate and control the world's trade. It involved thirty nations and engaged most of the population of the world, either directly or indirectly; more than thirty million soldiers were mobilized throughout the various parts of the world. Nearly 10,000,000 men were killed. The total cost is estimated at $186,000,000,000.

The United States was forced to enter the war (April 6, 1917) in defense of its rights against German attacks, in defense of civilization, and in defense of the liberties of the peoples of the world against the attacks and ambitions of German military autocracy. It was America's entrance into the War with the Allies which caused the turning point, resulting in the collapse of Germany, and the surrender of the Central Powers (November 11, 1918) under armistice.

The United States mobilized an army of 4,800,000 men. Of the 54,000,000 males in the United States population, 26,000,000 were registered for military service. During the nineteen months in which we were engaged in the war, we sent 2,084,000 men to France; of these 1,390,000 fought in battles at the front. The war cost of the United States was about $22,000,000,000.

RESULTS OF THE WORLD WAR—GEOGRAPHICAL AND GOVERNMENTAL

The world, as we have stated, is being remade. New nations have been born, powerful empires have fallen, new racial groups have been organized; new rulers, new laws, new boundaries have come into existence. The transformation which has been wrought by the birth of this new epoch in human history requires the remaking of all the maps and geographies throughout the world. A definite appraisal of these important changes is as follows:—

Governments in these countries have been overthrown: Germany, Austria-Hungary, Russia, Bulgaria, Turkey, Greece.

New nations have come into existence as Political Powers: Czecho-slovakia, Jugo-slavia, Poland, Esthonia, Finland, Hejaz, Latvia, Lithuania.

The status of many lands has required re-adjustment, and important governmental changes have occurred in many others.

Important Political Changes.—Three of the six countries in which the Governments were overthrown in the World War have changed from a monarchical to a non-monarchical régime—Germany, Austria-Hungary and Russia. Greece and Bulgaria at the close of the war remained tottering kingdoms, and the Sultan of Turkey still clung to his shadowy suzerainty. Five of the countries that sprung into being as a result of the war are republics: Czecho-slovakia, Finland, Esthonia, Latvia and Poland. Two are monarchies with republican tendencies: Jugo-slavia and Hejaz.

In the other countries where the war brought sweeping changes of Government two remained republics: China and Portugal; Luxemburg remained a monarchy; Montenegro and Serbia disappear as independent nations and, according to present indications, will become part of the new Jugo-slavia.

Germany, in the moment of her downfall as an empire, adopted a republican form of government, with pronounced socialistic tendencies, on November 17, 1918, immediately following the armistice and the flight of Emperor Wilhelm II to Holland. It is interesting to note the swing of the pendulum from the worst military despotism of modern times: following the abdication and exile of the Emperor, the once-powerful German empire fell into the hands of a saddler—Friedrich Ebert, of the working class, who took over the shattered monarchy from Prince Max of Baden, the last Imperial Chancellor. The country was thrown into revolution, passing through a reign of anarchy, in which the "saddler" held his country together, sending his representatives to Versailles to sign the treaty which reconstructs the world.

Similar revolutionary political changes had taken place in Russia with the fall of the House of Romanoffs, the establishment of a republic, the assassination of the czar and his family, with the uprising of the political forces known as the Bolsheviki under a reign of terror. The collapse of the Austrian Empire followed, and all the tottering governments of the vanquished Central Powers were thrown into revolution. From these ruins during the next generation a new world must be created.

The following chapters will be devoted to geographic and scientific information regarding the world today and its peoples, with a brief record of their knowledge and achievements.

International Geographical History of the World

The World Flat-Globe and International Geographical History (two parts) comprise a new Twentieth Century system of geographical review and reference. The Globe gives a full presentation of the earth's surface in the proper relations of continents and oceans, land relief, nations, and the world's commercial routes. The International Geographical History gives an interesting and complete description and explanation of the earth's surface, from the view-points of Physical and Economic Geography, and the history of the ages as shown in the political subdivisions of the earth. This Globe and Geographical History combined give to the reader a correct and substantial geographical education of permanent value. Through it he may acquire at once sound scholarship, and material aid in practical industrial and commercial problems.

Geography treats of the earth as the home of man. Amid what seas, land forms, soils, climatic conditions, varieties of animal and vegetable life and other phenomena of nature does man live and toil? How does each of them affect man and his enterprises? How does he utilize, modify, improve or subdue them? The purpose of the study of geography is to explain these natural phenomena, and to answer the question how they have made man what he is.

One cannot read history or current news aright, nor understand the marvels of man's modern achievements, unless familiar with geography. First of all one must know the relations of the various features of the earth's surface. An idea of the distribution of land and water, continents, countries, and islands over the entire surface of the earth is best conveyed by means of a globe. It is only on the spherical surface of a globe, or by means of a projection on a flat surface such as that of the Flat-Globe, that the

various divisions, political and natural, can be shown approximately in their proper proportion and relation to one another throughout the whole extent of the world.

An old-style ball globe is very expensive and cumbersome, and few can afford such a luxury. The World Flat-Globe has therefore been devised to bring within the reach of all a true conception of the earth's surface. It has practically all the merits of a ball globe and many advantages the spherical globe does not possess, while the cost is comparatively insignificant.

It is the aim in this Geographical History to give a comprehensive description of the earth from every point of view in connection with the Flat-Globe.

The World Flat-Globe is circular in form, perfectly flat, twenty-eight inches in diameter, and hangs against the wall. Each side contains a complete hemisphere—on one side the Western and on the opposite side the Eastern Hemisphere. By bringing the lines of latitude and longitude exactly opposite one another, as we do in printing, one may follow the entire surface of the earth, simply turning the Globe over when going from one hemisphere or side to the other.

A view of the world in its various aspects is presented in these pages, with pertinent references here and there to the Flat-Globe and the best methods of using it.

PHYSICAL GEOGRAPHY

Physical Geography explains the development of the earth's surface of today, tracing its history through remote ages of the past. Man came upon the earth at a particular stage in its history. He finds the sphere composed broadly of three great units —a solid mass, on which he lives, a partial envelope of water, and a complete envelope of gaseous atmosphere.

The earth's surface is constantly changing, under the influence of various agents from within and without, acting upon the rocks of the solid earth. Hence we must study the earth materials, the agents at work upon them, and the resulting forms produced.

In the course of this study, it is best to gain first a knowledge of the characteristics of the Earth as a Whole, and its relations

to its surroundings in the heavens; next to study the Lands, then the Atmosphere, the Oceans, and finally the effects of all these upon Life on the Earth.

THE EARTH AS A WHOLE

A Family of Worlds.—The Earth is one of a number of planets that form our solar system, and this system is but one of many in celestial space. Our planets revolve around the sun, and derive their light and most of their heat from it. Of the known planets, Mercury and Venus are nearer the sun than we are, but Mars, Jupiter, Saturn, Uranus and Neptune, in order, are further away from it. The earth is the fifth in size, being larger than Venus, Mars and Mercury. Outside the orbit of Mars are the minor planets or asteroids, of which over 700 have thus far been discovered. Around most, at least, of the planets revolve other smaller worlds, satellites, such as our moon.

The Earth in Space.—The earth, together with the sun and the other planets, is moving through space with a great but undetermined velocity. It also revolves around the sun, and, at the same time is spinning on its own axis. The air does not impede these motions because it is as much a part of the earth as is the rock envelope itself. The motions of the earth will continue until such power is exerted to overcome them as was imparted to produce them.

Shape, Size and Density.—Centuries ago it was shown that the earth is not flat but round; next that it was round in all directions, very much like a sphere. Now we know that its shape is approximately that of a slightly flattened sphere, whose polar diameter is shortened about 13.25 miles at either end, or 26.50 miles altogether. Such a body is called an oblate spheroid. The nearly spherical shape is shown in a number of ways—by the disappearance of objects on the horizon in all directions, by changes in the position of stars as we go north or south, the shape of the earth's shadow on the moon during an eclipse.

We are wont to think of the world as enormous, but it is really one of the smaller heavenly bodies. The universe is so vast that our thoughts cannot grasp its dimensions. We know at least that the solar system occupies only a minute part of space, and we

need not seek outside this system for proof of the comparative insignificance of our dwelling-place. Our satellite, the moon, is circling around the earth at a distance of 238,840 miles. Let us imagine the earth and its satellite placed within the sun, the earth at its center, with the moon moving around the earth at its present distance; the sun would still extend nearly 200,000 miles beyond the moon at all points. The diameter of the sun is over 109 times that of the earth.

Many of the stars are larger than the sun. All the stars are far-away suns, and the star that is nearest to us is so remote that, while it takes only eight minutes for a ray of light to travel nearly 92,800,000 miles between the sun and the earth, it requires about three and a half years for the ray to reach us from the nearest star. Astronomers have calculated the distance of the nearest stars from us, but their figures are expressed in so many hundreds of millions of miles that they convey no definite idea to our minds. A common way of stating star distance is to say that is a certain number of light-years away.

The earth has a polar diameter of 7,899.74 miles, and a polar circumference of 24,859.76 miles; an equatorial diameter of 7,926.61 miles, and an equatorial circumference of nearly 24,902 miles. The area of the spheroid is 196,971,894 square miles, or about sixty-five times that of the United States exclusive of Alaska. Of this great total, 27.8 per cent., or 54,758,186 square miles are land, and the remainder, about 144,323,708 square miles, is water.

At the surface of the earth, the rocks average 2.56 times as heavy as water, or as we say, have a density of 2.56; but the earth as a whole weighs more than it should if its density were the same throughout, from which we compute that the mean density of the earth is 5.576. Toward the center, the density of the earth's matter must be very high, to produce the general average just stated.

Other planets have densities varying from .7 to 5.05. That of the sun is 1.415.

The Earth's Parts.—The earth is often said to have a "crust"; but it is solid clear to the center, intensely hot and under great pressure there, and in its behavior as a globe is almost as rigid as steel. The oceanic waters and the atmosphere, fluid though

they be, act as a part of the earth in its movements in space.

How the Earth Grew.—The earth was not always as it is now. It has had its yesterdays, it looks forward to tomorrows. It had a beginning, it will have an end.

For many years the origin of the earth was accounted for by what was perhaps the most beautiful scientific theory ever invented—the Nebular Hypothesis. According to it the solar system was at first a vast rotating spheroid of intensely hot gas, whose diameter was greater than that of the orbit of Neptune, our most distant planet. Gradually parts of this gas, along its equator, became separated from the parent body by the shrinking of the latter, making a ring like Saturn's. This ring eventually broke up into clusters which were later to be planets. The clusters continued a revolving motion about the parent, inherited from the time when they were parts of the ring. They also rotated on an axis of their own, and were able to form rings in their turn. These rings, by repeating the processes described, became satellites like the moon. Repetition of the stages outlined above finally gave the planets, satellites and asteroids we know, and left our sun as a center of revolution for the whole flock of spheres.

The earth, one of these gaseous spheres, gradually cooled and contracted, becoming first liquid, then gradually solid. Atmosphere and an oceanic envelope were left behind in gaseous and liquid form respectively. Finally, when the temperature at the earth's surface was not much higher than now, all the activities of land and sea and air were in full operation; and low forms of life appeared, from which by evolution all the plants and animals of today have arisen.

Now, this wonderful theory was based upon the observations of more than a century ago, when telescopes were crude and weak, and when our knowledge of physics and of chemistry was primitive. Of late years there has arisen another explanation, which, while as much a theory as the earlier, still follows more closely the laws of nature now known, and explains much in the earth's history and present state that the other did not. It is called the Planetessimal Hypothesis, and in every feature it is the opposite of the Nebular Theory.

In the sky are many clusters of light-giving bodies called Nebulae, and most of them have a spiral form, showing a head and two spiral tails. These tails are lighter in certain spots. The theory is that our planets represent dense spots in the tail of such a nebula, the sun being the head. Gradually the particles of earth matter, or planetessimals, near enough to one of these knots to be attracted, would fall in toward it, and thus from a small beginning an earth would grow. In the end most of the loose star-dust in our part of the sky has thus been used up, and we have only a few meteors now and then to remind us of our early ages.

Thus the earth grew from small to larger; starting cold or nearly so, it became hot within by compression as it grew. Water and gases for its two envelopes were gradually pressed out of the rock to the surface; and life appeared, not when it became cool enough, but when the atmosphere gained proper volume and composition. It is a wonderful theory, even if it may require change as our knowledge increases.

Rotation and its Effects.—While the earth is moving forward in its path through space, it is turning on an axis, completing its rotation in about twenty-four hours. The sun therefore is at any moment rising on one part of its surface and setting on another part. So great is the speed of this rotation, more than one thousand miles an hour at the equator, that we should be thrown off into space were it not that the earth's attraction, or gravity, is more powerful than the tendency to fly off, or centrifugal force.

The rotation of the earth on its axis causes the succession of day and night. One half the earth always faces the sun; the other half is turned away from it; but the rotation is constantly bringing every part in succession into the light. Even at night the earth receives sunlight that is reflected from the moon.

The Earth's Revolution.—Every particle of matter in the universe tries to draw to itself every other particle. This is called the attraction of gravitation. Some force impelled the earth to move in a straight line, but the force of gravitation is exerted at the same time to draw it to the sun; and the two forces, continually exerted on the earth, are so adjusted that instead of

shooting off into space or falling into the sun, the earth revolves around the sun in a nearly circular orbit; and the period we call a year is merely the time in which the earth makes a complete revolution around the sun.

The earth moves in its orbit at the rate of 68,000 miles an hour, or 600,000,000 miles every year in its journey around the sun. The direction both of the revolution and of the rotation of the earth is from west to east.

If propulsion and gravity were exactly balanced, the earth's orbit would be a circle; but as they are not, the real form of the orbit is an ellipse. At one part of its course, therefore, the earth is nearer to the sun than at another, its average distance being 92,800,000 miles and the variation of distance about 3,000,000 miles.

Cardinal Points.—Relative position on the earth is based on the direction of the earth's axis, the imaginary line on which it spins. The axis points very nearly to a star known as the north star (Arcturus). The ends of the axis are its poles, and the star toward which the axis points is called also the polar star.

From any part of the earth the direction toward the pole nearest the north star is north; toward the opposite or south pole the direction is south. Toward sunrise the direction is easterly; toward sunset it is westerly. Or, looking northward, east is on the right, west on the left.

Direction.—We base all our description of direction upon these cardinal points. Thus we speak of northeast, southeast, southwest, northwest. Sailors have for a very long time divided the direction-circle from north clockwise to south and around to north again into thirty-two "points" of equal angular deviation. Most people, however, prefer the plan that divides the circle into 360 degrees, each composed of sixty minutes and each minute of sixty seconds. By this means, direction can be very accurately measured.

Terrestrial Magnetism and Compass Direction.—The earth is a "lodestone," like a magnetized bar of steel, and has polarity—that is, different parts of the earth behave differently toward the mysterious force in nature which causes one end of the compass needle to point more or less toward the north in most parts

of the world. It was known centuries ago that in most places the magnetic needle does not point to the true north, but is deflected to the east or to the west of it. This deflection is called magnetic declination, and the amount of the declination for all parts of the world varies and must be redetermined from time to time.

When the magnetic needle is hung on a horizontal axis the north end tends to point downward toward the earth in the northern hemisphere, and to point upward away from the earth in the southern. This is called the magnetic dip, or inclination. In 1831 the British polar explorer, James C. Ross, discovered a point on the west coast of Boothia, in the American Arctic regions, where the dip needle pointed almost exactly to the center of the earth. This spot is the north magnetic pole, and varies slightly in position, moving sometimes east and sometimes west. The position of the south magnetic pole has not been exactly determined. Many nations are now making investigations to increase our knowledge of the causes and results of the earth's magnetic condition, and in this work the United States is taking a leading part.

Mariners steer largely by compass, and exploration by land and sea depends upon it; but compass directions must be constantly corrected to true north by observations on the north star or some other reliable heavenly body.

Latitude.—An imaginary line may be thought of as drawn around the earth midway between the poles, and this circular line would bound a plane at right angles to the axis and would divide the earth into two equal parts—a Northern Hemisphere and a Southern Hemisphere. We call this line the Equator, and its position marks zero latitude. Other lines may be imagined drawn around the earth but through the poles, and these would be ellipses because the polar diameter is shorter than the equatorial. If these ellipses are cut by lines making definite angles with the equatorial plane, say at intervals of five degrees, the lines will intersect the earth's surface much as a plumb-bob hangs, vertically. The effect of these intersections is to give a series of imaginary circles around the earth parallel to and smaller than the equator, and appropriately called Parallels of Latitude. But because of the elliptical shape of the earth's polar cross-section,

these parallels are not the same distance apart. As one goes from the equator to the pole, the degree-length becomes somewhat greater, as is shown in a table below (p. 10). The variation is so slight on either side of 69 miles, however, that it is customary to say in a general way that a degree of latitude is 69 statute miles long.

Each degree is of course divisible into minutes and seconds, and is designated as being north or south of the equator. Thus Columbia, South Carolina, is in 34 degrees north latitude, while Cape Town, South Africa, is in 34 degrees south latitude.

Longitude.—The imaginary lines passing through the poles, referred to above, are called Meridians. Their possible number is infinite, but we find it convenient to regard them as dividing the equator and latitude circles into degrees, minutes and seconds, and to regard any such line running from pole to pole as a single meridian. Obviously, since these point everywhere toward the poles, their direction is north and south. The parallels of latitude intersect them at right angles, their direction being east and west.

These imaginary lines on the earth become real lines on globes and maps, on the latter curved or straight according to the nature of the map projection. On the Flat-Globe, which is so constructed as to give the most correct representation possible of direction, distance and area, the parallels and meridians are curved, and lie ten degrees apart.

The length of degrees of longitude decreases from 69.172 statute miles at the equator to zero at the poles. The statute mile is 5,280 feet long. The nautical mile, or "knot," is 1/60 of a latitude degree at the equator, and is 6080.27 feet long. It is useful chiefly in navigation. Distances are usually measured on maps and globes in statute miles, unless nautical miles are specified. In sailing, whether reckoning distance or speed, nautical miles are more commonly employed.

The following table illustrates the length of a degree of latitude, and of longitude for certain latitudes from equator to poles. It will be noticed that degrees of latitude are measured on meridians and those of longitude are measured on parallels.

Latitude	Length of Latitude Degree (miles)	Length of Longitude Degree (miles)
0	68.704	69.172
10	68.725	68.129
20	68.786	65.026
30	68.879	59.956
40	68.993	53.063
45	69.054	48.995
50	69.115	44.552
60	69.230	34.674
70	69.324	23.729
80	69.386	12.051
90	69.407	0.000

It is convenient to be able to refer to the location of places on east-west lines, that is by longitude, by reference to some fixed meridian; just as we refer to latitude as north or south of the equator. Such an arbitrarily chosen line is called the prime meridian. At times in the past both Paris and Washington have been used as points of departure by the French and Americans; but the civilized world today accepts the Royal Astronomical Observatory in Greenwich, England, as the point of departure, and the meridian passing through it is called zero longitude. East of this to a point half-way around the world is east longitude, and westward for an equal distance is west longitude. The continuation of zero longitude through the poles and along the other side of the world in a direction exactly opposite the former line gives the meridian of 180 degrees. Thus, the Flat-Globe shows that Colombo, Ceylon, is in longitude 80° east, and that Charleston, South Carolina, is in longitude 80° west from Greenwich. For convenience the Flat-Globe is divided into an Eastern and a Western Hemisphere along the meridians 20° W and 160° E.

Longitude and Time.—As the rotation of the earth on its axis causes day and night according as the various parts of its surface are turned toward the sun or away from it, we measure time by this rotation. While it is not strictly correct to say that the earth makes a complete rotation in 24 hours, the idea is serviceable for all practical purposes. It then follows that, as time is measured by the relation of the earth's surface to the sun, there must be at any instant a difference in clock time of one hour for every 15° of longitude (1/24 of 360°). Thus, when it is noon at Greenwich it is 1 P.M. at all points in longitude 15° east, and 11 A.M.

at all points in longitude 15° west. The application of this to standard time belts will be explained later (p. 136).

The International Date Line.—This line marks the change of day in circumnavigating the earth east or west. By common consent of the leading nations, it is placed in the Pacific; for a great part of its extent it coincides with the 180th meridian. When ships "cross the line," they add a day to their calendar if they are going west, and subtract a day if they are going east. Why? The date line is placed in the Pacific, far from most lands, because the change is most conveniently made where traffic is not likely to be disturbed by a confusion of dates. As a matter of fact, the observance of the date line is theoretical rather than actual, and sailing masters change time, not at the line, but most commonly at the nearest port of call. The line as drawn on the Flat-Globe represents the official interpretation of the United States Government at present.

Inclination of the Earth's Axis, and its Effects.—The inclination of the earth's axis to the plane in which it revolves around the sun causes changes in the length of days and nights, and the alternation of seasons. If the axis of the earth were perpendicular to its orbit, day and night would be equal in length all the year. But the axis is inclined 23½ degrees from the perpendicular, so that it points nearly to the pole star. Twice a year, March 21st and September 23d, the earth reaches a position in its orbit so that the sun is exactly vertical over the equator. Then the line between the dark and the sunlit halves of the globe, dividing day and night, passes through the poles, and day and night are each twelve hours long throughout the world. On these days the sun rises due east and sets due west. March 21st is called the Spring or Vernal Equinox, and September 23d the Autumnal Equinox.

After the spring equinox the north pole is inclined more and more toward the sun until June 21st, the date of the Summer Solstice, when the inclination reaches 23½ degrees. The days in the northern hemisphere lengthen throughout that time, as more of this portion of the earth is exposed to sunlight; and at midday the sun is higher in the heavens. During this time the days are longer also as one goes northward, until within the Arctic Circle the sun does not set at midsummer, and at the north pole the

day is six months long. At the same time the south pole, turned away from the sun, has a night of half a year.

The longest days of the temperate zones vary from a little more than thirteen hours upward. They vary from fifteen to eighteen hours in the regions of densest population. The long summer days of the northern United States and middle Europe add very greatly to the food-producing power of those regions.

After June 21st the axis becomes less inclined, and the days in the northern hemisphere shorten gradually. When the autumnal equinox is passed, the days are shorter than the nights, for the north pole is now turned away from the sun. These changes progress until December 22nd, the date of the Winter Solstice, when the north pole is inclined 23½ degrees away from the sun, and the northern hemisphere has its shortest day. This is also the midnight of the six months' night at the north pole, and the south pole is enjoying the midday of its six months' day.

During one-quarter of the year the northern hemisphere receives far more sunshine than the southern hemisphere. It is then the summer season of the northern half, and the winter of the southern half of the world. During three other months the seasons are reversed; it is winter in the northern and summer in the southern hemisphere. Between these two seasons lie two others, spring and autumn, when both hemispheres receive about the same amount of heat. But in one hemisphere the heat is increasing, in the other it is diminishing; and each hemisphere has spring while the other is passing through autumn. In summer the high temperature of the torrid zone advances to middle latitudes and the cold of the polar regions becomes less severe; but in winter the cold of the polar regions is intense, low temperatures advance through middle latitudes, and the heat on the edge of the torrid zone is temperate. The half of the earth over which the winter season reigns receives the rays of the sun more slantingly; they are scattered over a larger surface, and consequently their heating power is less intense.

The earth is so small that it receives only a little of the sun's light and heat—less than one part in two billion—but it is this small proportion that makes life possible on the earth.

The Seasons and Agriculture.—The two great farming regions are in the north and south temperate zones. When it is summer

in one of these zones it is winter in the other. This is a kind provision of nature, for by means of it the raising of food and vegetable fibers, the fruits and the grasses required by man and the domestic animals never ceases. It is going on in some parts of the world all the time, the season of rest in one hemisphere being the season of growth in the other. For several months our farm lands are frozen to a depth of several inches or more; but in those same months the farmers of Argentina, Cape Colony, Australia and New Zealand are cutting their wheat, turning grass into hay, and gathering orchard fruits. The wheat harvest is in progress somewhere every month in the year. Even in the temperate zones there is much difference in the time during which the same crops are gathered. Thus in the southern States, vegetables are grown much earlier than in the northern States, and the north can draw upon this source of supply during the winter and early spring until its own vegetables mature; moreover, if the wheat crop of the north temperate zone yields less than usual, it is a great blessing to be able to draw upon the wheat that is grown in the south temperate zone several months later without waiting a whole year for the succeeding northern crop to ripen.

A little after midwinter the fine peaches, grapes, plums and other fruits of New Zealand and Cape Colony, carried thousands of miles in cold storage, are found in the markets of London and New York, while our own vines and fruit trees are still leafless. In the torrid zone, food is grown the year around. But in the temperate zones, where vegetable food can be grown only a part of the year, it is a great advantage to be able to draw upon the supplies raised in another zone at another time of year. So the differences in the growing seasons, together with cheap and rapid transportation and refrigeration to preserve perishable products, help to bring all nations closer together in business and social relations.

EARTH AND SKY

Stars and their Motions.—In the sky, besides our planets, there are myriads of visible stars, each a sun, and probably many that we shall never see, even with the most powerful telescopes. More are visible on clear dry nights than when atmospheric

moisture dims them; and in the rare air of high altitudes they are wonderfully bright, and special groups, such as the Milky Way, seem very near. Yet they are so distant that, although they must be moving swiftly in different directions, they have not changed their apparent position with reference to each other in all the centuries since man began to study and to map them. But as a whole the heavens—the celestial sphere, as it is called—moves so rapidly that from hour to hour one can see a change. The stars all appear to move in the same direction and at the same rate. This is because of our own rotation, which brings stars successively into view above the eastern horizon. Even the north star has a slight apparent motion, too small to be detected except by careful measurement.

From very early times the brightest stars have been regarded as grouped into units called Constellations, each group receiving a name, such as the Great Dipper, Little Dipper, etc. This is a convenience for study, but it does not mean that the stars in a constellation have any real connection with one another.

Some of the light spots are found under the telescope to be nebulae, or clouds of incandescent star-dust; and it is from such a nebula that many scientists believe that our own solar system was evolved.

Comets.—The name is derived from a Greek word, meaning long hair, and was doubtless applied to comets on account of the hairy appearance of the luminous matter characteristic of them. These celestial bodies are distinct from all others, and in some respects are not yet well understood. They consist of three parts: the nucleus, which, through the telescope, looks like an irregularly formed planet; the coma or nebulous light surrounding the nucleus, and the tail, a trail of light which on the greater comets sometimes extends over a long arc of the heavens. They appear to be fragments of nebulous matter. They have orbits the form of which, however, is likely to be changed by the attraction of the sun or of some planet, and sometimes they have been observed to start off on orbits that would never bring them back again to human vision. Their number is supposed to be very large, but only 30 or 40 visible to the naked eye appear in a century. Not more than five or six are discovered by the telescope each year. Most of them are new ones. A few comets reappear at regular

intervals; others, seen but once, never return. Less than twenty comets are known to reappear. They revolve around the sun in periods varying from three years to more than seventy years.

Meteors.—Meteors are small dark bodies that move through space, most of them, it is believed, being concentrated into groups. Not infrequently, when a meteor appears in our atmosphere it leaves a trail of light, in popular language it is called a "shooting star." These meteors are not stars, however, but bodies that become superheated and visible only when they enter our atmosphere. As their average rate of motion is about 25 miles in a second, the friction of the air, and its compression in front of them, when they dash into it, generates so high a temperature that most of them are completely burned up before they reach the earth. Some of the larger of these bodies resist the heating so far that the unconsumed parts of them reach the earth. These are called meteorites, or meteoric stones. Very few meteorites have been seen to fall, and there are not a large number in museums or private collections whose fall is a matter of personal record. No one knows how they came to be shooting through space.

Meteors consist largely of substances found in the earth, although some of these substances are rare at the surface.

Some of them are nearly pure iron and nickel, and others are chiefly stony matter with grains of iron. It is believed that they are falling into our atmosphere all the time. The incandescent shooting stars are visible to the naked eye; the finer dust particles are visible by reflected light only. The late Professor Newton, of Yale University, estimated that the daily fall of meteors is not far from fifteen or twenty million. Professor Rees, of Columbia University, writes that millions of them travel together in the same swarm or group, with plenty of room, as the separate bodies are frequently miles apart. The best time to observe them is between midnight and the twilight before sunrise.

The stream of meteorites radiating from the constellation of Leo, which was last observed by telescope in 1866, had a breadth of not less than 100,000 miles and a length of 300,000 miles. It had been observed that the Leonids, as this swarm of meteors is called, usually reappeared every thirty-three years, and they were expected again in 1899, but failed to appear, owing doubt-

less to some unknown effect of planetary action that disturbed their motion. The first definite record of the fall of a meteorite was in Croatia on May 26, 1751. The ninth record was that of the Mazapil (Mexico) meteorite, weighing ten pounds, which fell on November 27, 1885. The tenth fall recorded was that of the iron-nickel meteorite that fell in Johnson County, Arkansas, on March 27, 1886. On March 12, 1898, a meteorite was seen to drop into the Gulf of Finland, making a clean-cut hole 30 feet in diameter through the ice; fragments of it were dredged up in the following year. The largest meteorite in a museum was brought by Rear Admiral Peary from near Cape York, Greenland, to the American Museum of Natural History, New York.

Phases of the Moon.—The moon always presents the same face to the earth. One might infer that the moon does not turn on its axis, but this would be incorrect. As the moon revolves around the earth every month, all sides of it would be seen by us during this monthly revolution if it did not rotate on its axis. The reason why the same face of the moon is always presented to the earth is because it turns on its axis exactly as fast as it revolves around the earth and in the same direction. The moon makes twelve rotations on its axis in a year, while the earth makes a complete rotation every day.

The moon does not always present the same appearance to us, and these differences of aspect are called the phases of the moon. The fact that now a larger and then a smaller part of the lunar face turned toward us is illumined by the sun is due to the moon's position in the heavens. The moon is a dark body which we see by reflected sunlight. When the sun is shining fully on the far side of the moon, one cannot see the side turned toward us, which is dark except for a dull light reflected from the earth. Popularly, the moon is supposed to be new when a narrow bright border on one edge, which takes the form of a crescent, is visible. This phase is called the new moon. As the moon moves along in its revolution and completes one-fourth of its journey, the sun lights up one-half of the side we see, the other side remaining dark. The moon then presents the appearance of a semicircle. This is the first quarter. When half the revolution is completed, the face we see is opposite the sun, which shines fully upon it. This is full moon. During the second half of the revolution, the

same phases are repeated in the reverse order, and we have the last quarter, and then new moon again.

Eclipses.—Sometimes the sun is wholly or partly shut out from view because the moon passes between the earth and the sun. When the whole or a part of the sun is thus hidden, it is called an eclipse of the sun.

At such times the shadow of the moon is cast on a part of the earth, and if we are in that shadow we see the eclipse; but although the moon has intercepted the rays of the sun which illumine the place where we are, millions of other people can see no eclipse because they are not in the shadow, and to them no part of the sun is shut out of sight. The outline of the eclipsed part of the sun is circular, because the moon is a sphere. If the full shadow of the moon is cast on the earth, the eclipse is total to all observers in any part of the shadow; but it is a partial eclipse if only a part of the sun's disk is shut out of sight.

When the moon is at its greatest distance from the earth the point of convergence of its shadow does not reach the earth. In such cases the central part of the sun's surface is shut out of sight to the observer near the central line, while the outer edge of the sun's surface is seen in all its brightness. This is called an annular eclipse of the sun.

In the course of their movements, the earth may come between the moon and the sun. If the moon passes through the shadow of the earth to such extent that the entire surface is in shadow, the eclipse of the moon is total. The form of the shadow seen on the disk of the moon is circular, because the earth, producing the shadow, is a sphere.

Sometimes the object that is temporarily concealed from us by the interposition of some other body between it and the earth is a star. This is called not an eclipse, but an occultation. The term is particularly applied to the passage of a fixed star behind the moon.

Sometimes the sun is concealed to a very small extent by the passage of Venus or Mercury across its face; in the same way, a bit of Jupiter may be concealed by the passage of one or another of his satellites across his disk. The term "transit" is applied to such occurrences. Astronomers are able to foretell the exact time of these events; and they have often traveled half around

the earth to witness an eclipse of the sun or a transit of Venus, in the hope that observation under these circumstances would yield facts of scientific value.

The causes of eclipses are simple when they are understood, but they have often thrown millions of persons into a state of wild alarm. In ancient Rome it was against the law to speak of eclipses as due to natural causes; and millions of the Chinese still believe that eclipses are caused by great dragons that are trying to devour the sun and the moon.

THE LANDS

GENERAL RELIEF FEATURES

Land and Water.—The Flat-Globe shows that by far the greater part of the land surface of the earth is in the northern hemisphere. Most of the land forms three great areas called continents. There are also many smaller bodies, called islands. The continents actually extend beyond the shore line, in places two hundred miles or more. The water-covered part of the continental area is called the "continental shelf." From north polar regions the continents radiate southward in two distinct masses—Eurasia and the Americas. It is convenient to regard Europe and Asia as separate continents, and similarly North and South America. Africa, although connected with Asia, is always considered as a separate continent also.

Only one continent, Australia, is in the southern hemisphere, but the greater part of South America and parts of Africa and Asia extend south of the equator. Of the continents, Europe and North America are entirely in the northern hemisphere. It is not yet definitely known to what extent Antarctica is a continent, but probably we must add it to the other six.

By far the greater part of the southern hemisphere is covered by the sea. For convenience, the sea is divided into smaller areas called oceans. The Flat-Globe and the map, p. 71, show the relative position of the six great oceans—Arctic, North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian. In part, the oceans are separated by the continents; elsewhere there is no land barrier. These oceans altogether occupy about three-fourths of the earth's surface.

The earth's surface may be considered as wrinkled into great waves—the continents occupy these; and between the waves lie vast troughs, filled to overflowing by the oceans. On the waves are innumerable ripples. These are the mountains and plateaus. These continental arches or platforms, and the ocean basins, are

called relief features of the first order. All others are of minor importance. If we add the altitude of the highest mountain and the depth of the deepest parts of the ocean, we find that the total unevenness of the earth is nearly twelve miles. How little this is may be seen when one considers that it represents but 1/330 of the earth's radius. The wrinkles on a rough-skin orange are proportionally far greater.

The Continents.—The term "continent" is loosely used. By some geographers it is applied to the three great land masses, the eastern or Asian, the western or American, and the Australian continent. By others the grand divisions, Europe, Asia, Africa, North America, South America, and Australia are called continents; and this is the more popular usage. The boundary between Europe and Asia is variously drawn; on the Flat-Globe it is the boundary established by the late Imperial Russian government.

A very important feature of the continents is the continental shelf noted in a previous paragraph. Most of the great ports of the world are situated where the continental shelf is narrow and the water next the shore is deep. It is the seat also of the world's chief fisheries.

At the contact of the continents with the sea are many capes, peninsulas, and isthmuses. Almost any angle or jutting land along the coast which affects commerce is a cape. In regions where there is a considerable commerce, many capes and headlands are surmounted by lighthouses. The character of peninsulas is shown on the Flat-Globe. Such peninsulas as Jutland, Cape Cod, and Corinth are obstructions to commerce and canals have been constructed across them. The Isthmus of Panama is a narrow neck of land which joins South America to North America and the Isthmus of Suez joins Africa to Asia. In each case a ship canal pierces the obstruction, thereby saving from 7,000 to 10,000 miles of sailing.

Surface of the Continents.—The surface of each continent is diversified by mountains, plateaus, and plains, with their rivers and lakes, forests and prairies. Each continent also contains at least one great highland region. The great highland of the American continents stretches north and south a distance of nearly 10,000 miles; that of Europe and Asia extends about the

same distance from northeast to southwest. The chief highlands of Africa and Australia are on the eastern side. These vast highlands contain most of the great mountain ranges and high plateaus of the world. The long slopes of the world face the Atlantic Ocean.

The coast lines of North America, Europe, and Asia are deeply indented and possess a large number of harbors. South America, Africa, and Australia have more regular coast lines and fewer good harbors. The existence of so many good harbors on the Atlantic coasts of Europe and North America affords one explanation of the very extensive commerce between them. The gentle slopes of fertile lands account for their dense population.

The surfaces of the continents are not rigid and fixed; on the contrary very slow changes in land are constantly taking place. These changes are more easily noticed along the coasts than elsewhere. Thus, a considerable part of the Atlantic coast of the United States has been sinking within very recent geological times. This movement has made estuaries at many of the river mouths; and the old mouth of Hudson River is now many miles seaward. Most of the ports of the Atlantic coast of the United States are situated on submerged river mouths. Some other coasts, in part because of recent elevation, have few harbors. This is true of portions of the Pacific coast of both North and South America.

Islands.—The islands of the earth are conveniently classified as continental and oceanic. The continental islands are situated near the continents and may be considered a part of the continent near which they lie. Thus the West Indies are a mountain range extending from the Mexican coast, the lower part of which is below sea-level. The same is true of the chain of islands extending from Alaska, and also of that off the coast of Asia. This is shown on the Flat-Globe.

Oceanic islands are far from the continents. Many of them are volcanic peaks. The grand division of Oceania consists of the high volcanic peaks of a great plateau in the Pacific Ocean. The tops of the volcanic peaks are above sea-level; the floor of the plateau is below it, and the base of the whole is in the ocean depths.

Islands played a most important part in early exploration, for

they formed links in a chain for adventurers whose ships might not have been able to cross a pathless ocean. The Norse voyages to America by way of Iceland are examples. Today, in addition to acting as sources of revenue to sovereign states and as refuges for surplus population, islands, especially the oceanic ones, are highly prized as fuel supply stations for ships, and as cross-roads junctions for the transfer and exchange of commodities. The importance attached to island colonies by ourselves, and by the great nations of Europe, is evidence of their value as possessions.

AGENTS OF CHANGE

To understand the effects of our physical environment upon industry and commerce, we must realize that the earth has not always been as it is today, and that tomorrow it will be different. From the beginning, a small series of agents have been actively engaged in molding its surface, and they will still be at work many ages hence. These agents are of two classes—one working from the interior of the earth, the other operating on the surface. The first, interior heat and rock movement, tend to make the surface rougher; the second, weathering, wind, running water, snow and ice, and the standing water of the seas, strive to grade off the earth's surface more nearly to a plain at levels not far above the sea.

Heat of the Interior.—The interior of the earth becomes hot rapidly downward, and most of it is at an intensely high temperature. Yet, because of the pressure exerted upon it, it remains solid. But whenever a chance offers, this hot and mobile solid liquefies and presses its way up into the overlying rocks, giving the great granite masses that occupy so much of Canada, New England, and Scandinavia. If it is able to reach the surface, volcanoes are formed.

Heat and pressure inside the earth also change rocks so as often to make them more resistant, and so causes them to stand up as mountain and plateau masses. Heat is also responsible for much of the wealth of metallic mineral deposits of the world.

Rock Movement.—The rocks near the earth's surface are in almost constant slow motion. Land rises and falls. Strata are folded, or perhaps broken and slid, one part past the other. This

last operation we call "faulting," and the break is called a "fault." By means of this slow movement, rocks have often moved for distances varying from small amounts to thousands of feet, and when the land is worn down we find on opposite sides of such break, rocks that do not fit together, but are joined like two pieces of dissimilar wood in cabinet-work. Sometimes valuable mineral veins occupy the cracks along which the slipping occurred. All these movements are so slow as to require thousands of years to produce the results described above. In this way the structures are formed that are shown in most mountain and plateau regions.

Weathering.—The weather acts ceaselessly upon the surface, disintegrating and decaying the rocks downward for a few inches or feet. Heat and cold, moisture, frost, and in addition plants and burrowing animals, all conspire to break the rocks into small bits; which either form soil or are carried away by the agents described below. Thus the level of the land is constantly lowered by their destructive action. No region is so hot or so cold, so moist or so dry, as to escape these effects.

Wind.—Wind is very active in shaping the land; not only in deserts and on sandy coasts, but over all the surface not too densely covered with vegetation. Even a breeze blows away fine matter, as one realizes in a city street on a blustery day; and the amount of dust and sand moved each year in all parts of the world is very large. In time this changes the nature of the land surface noticeably. Moreover, the sand grains are a successful cutting tool, and erode rock rapidly. Desert landscape, due to these two activities, is unique.

Running Water.—By far the largest share in wearing down the continents is borne by streams. Even in most of the arid regions they work at times, although the streams may scarcely outlive the storms that produce them. A large part of the rainfall either runs off on the surface in rivulets and larger streams, or sinks into the ground, feeding plants, and becoming part of the ground-water or running slowly down to the valleys to enlarge the brooks and rivers.

In their upper and swifter parts, streams erode the land, aided by loose fragments broken up by weathering. The hardest rock is not proof against the cutting force of torrents, armed

with boulders, pebbles and sand. As the work has gone on ceaselessly for ages, the total effect has been to change the landscape completely, not once but many times. If they are free to erode long enough, the rivers wear down the highest mountains to gently rolling plains, close to sea-level. Interruptions have often occurred, the land rising bodily, lifting a plain of erosion into a plateau; or strata deposited under the sea are raised and crumpled into mountain ranges and systems, to form new land subject in its turn to destruction by running water. In fact, the topography of the continents, which exerts such a dominating influence upon all mankind, is at any place the result of the mutually antagonistic forces tending on the one hand to elevate the land surface and on the other to wear it down to sea-level by the efforts chiefly of streams.

In the lower part of a stream's course the speed of its current becomes less, and instead of wearing away the rocks it drops its load of sediment in the form of a flood-plain, which may become a delta at the ocean-front. Many of the most fertile plains of the world have been thus formed. Their one great drawback is danger from floods, such as those recurring often along the Ohio and the Mississippi. To guard against destruction of life and property from these floods has taxed the ingenuity of engineers.

Snow and Ice.—Snow is often a preservative, as every farmer knows. But when it falls on steep mountain slopes, avalanches may be started, tearing up the rock and perhaps destroying villages lying in the valley

Ice is effective chiefly in the form of glaciers, of which there are many in high latitudes and on the mountains at low latitudes. They carve the peaks into sharp and inaccessible pinnacles, gouge the river valleys into deep U-shaped gorges, and leave the valleys of small branch streams hung up above the main valleys, giving rise to beautiful water-falls. They dump the débris they have cut from the rock floors, or have received from frost weathering on the mountain slopes above them, in ridges, or moraines, at the end of the ice. These cause chains of lakes in the valley when the ice melts, forming natural reservoirs for agriculture or water power.

Just before the present age, and when primitive man had

recently come upon the earth, northern Europe and North America lay under vast ice-sheets, thousands of feet thick. This ice flowed southward until it met a climate so warm that the ice front melted as fast as more ice could flow down. The glaciers cut down mountains and lesser projections of rock, and deposited the rock fragments under them and at their front. The glacial "drift," as this débris is called, is responsible for innumerable lakes, like those of Finland and parts of the United States and Canada; and these lakes, and the glacial water-falls of many rivers, have fostered manufacturing in New England and other similar regions. Glacial deposits also formed the greatest fishing banks of the world—the Grand Banks of Newfoundland, and those off the New England coast and in the North Sea. Glaciation is responsible for the comparative scarcity and small size of the animals of today.

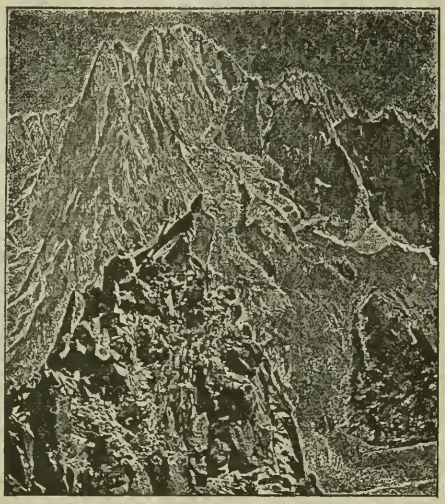
The growth, movement and melting of these great ice-sheets were so slow that we cannot well measure the time they took to do their work. Possibly hundreds of thousands of years were consumed in accomplishing what has just been described; and the ice finally melted away from northern North America only about a score of thousands of years ago.

Water of Lakes and Seas.—Standing water works through waves and currents. The latter are effective chiefly through influence on climate, carrying warmth into colder regions, as the Gulf Stream does, and less commonly bringing cold water past coasts of lower latitude, chilling the climate, like the Labrador current. This influence is of the utmost importance, for the climate of the northwest coast of Europe, the northeastern coast of North America, and its Pacific coast as well, is strongly affected by it. Sometimes a contact of currents of the two types causes grave dangers, as the fog banks off Newfoundland.

Waves pound the shores of continents and islands ceaselessly. In time they will make the most irregular coast straight, cutting back the rocky headlands and filling the bays with sand and gravel. Much of the débris is deposited on the sea-bottom, helping to form the continental shelf. The sea, however, is unable to cut back the margins of the continents indefinitely, and its effects are by no means as great as those of streams.

LAND FORMS

Mountains.—Mountains are especially high land, with small area at their summits. So varied is custom that where the land as a whole is plain and low, eminences a few hundred feet in height are called mountains; while in rugged regions those many hundreds of feet above the surrounding land may be called hills. Mountains are usually the result of upheaval of the earth's rocks, modified in their shape by the erosive processes, especially streams, and occasionally glaciers. They are commonly found in groups, often more or less in line, with "passes" between, which may be only slightly lower than the summits themselves. The great mountain regions of the world are vast groups or systems, composed of smaller groups, or ranges. Thus we speak of the Cordilleran System, extending from Alaska for thousands of miles southward. But it is composed of many ranges, of which the Coast Range is an example.



A PEAK OF MONT BLANC

The Flat-Globe shows the chief mountain ranges which extend along the coasts or through the interior of the continents and islands. They have had great influence in fixing boundary lines between nations, and upon commerce and climate. With the Pyrenees, between France and Spain; the Alps, between Austria and Italy; and the Himalayas, between Tibet and India, it is evident that mountain chains form not only natural boundaries between nations, but also between the languages of peoples.

High and especially continuous mountain ranges obstruct commerce. Along the southeast coast of China are several fine natural ports, such as Amoy and Fuchau, but their importance is greatly diminished by the fact that mountains stretch between them and the densely peopled valley of the Yangtse; so that trade

between this coast line and the interior is difficult and costly. Were it not for the Arlberg tunnel, intercourse between Austria and Switzerland would be very difficult; and Italy would be almost cut off from France and central Europe if the Mont Cenis, St. Gotthard, Lötschberg and Simplon tunnels had not been constructed through the Alps. All the railways from the Pacific that

THE MATTERHORN

have climbed the Andes of South America rise two miles or more into the air.

Because mountain ranges obstruct commerce and human intercourse, the passes that cross the ranges are of the highest importance, for commerce between peoples on the opposite sides must concentrate at the passes. Hence such passes as lead from Italy to Austria, and from India to Thibet, are worth the sacrifice of many thousands of lives if necessary in their defense. It is fortunate for the United States that nature provided comparatively low passes among the Appalachian ranges in the eastern part of the United States to the Atlantic seaboard as gateways for great railroad routes; and that the passes through which rail-

ways cross the great western mountain ranges are reached by long and gentle slopes. The low grades on the Grand Trunk Pacific railway of Canada, by which the Pacific coast is reached at Prince Rupert with but a few score miles of mountain road on even, gentle slopes, are a national asset in Canada's transportation problem.

Mountains supply large quantities of water for power and irrigation. Western miners use this power to drive mining machinery. The wheels of industry in Switzerland are turned by the torrents that descend the Alps. Nitrogen for fertilizer is extracted from the air by its aid. Within the past few years the power of mountain streams has been converted into electricity, and the electric current flows along copper wires, furnishing both light and power to communities hundreds of miles distant. Many mountains are clad with forests, and mountains are among the largest sources of forest wealth. Water is retained in the form of snow and ice on the higher slopes till it is needed in the summer season of crops for irrigation far below.

Mountain scenery is as substantial a source of gain as wheat or hay. Tourists leave millions of dollars in Switzerland every year, and our finest mountain regions are attracting more sightseers every year. Mountains also supply a large part of the metals and other minerals, and are therefore the scene of great mining industries.

In every land we may see the effect of mountain ranges upon climate. The Pacific ranges prevent the free circulation of rain-laden winds from the ocean, which part with their moisture on the western slopes of the Sierra Nevadas, so that the great mountains to the east of them are arid. The Alps shield the Riviera from the cold northeast winds, so that Nice is warmer in winter than Rome. The mountains of Scandinavia stop the warm moist winds from the Atlantic, and the Atlantic coast enjoys the milder oceanic climate, while the Baltic coast is very cold in winter.

The highest mountain peak in the world is Mount Everest, 29,002 feet, in the Himalayas, on the border between Tibet and Nepal; the highest mountain of North America is Mount McKinley, in Alaska, 20,300 feet; of South America, Aconcagua, in Argentina, 23,091 feet; of Europe, Mont Blanc, in France, 15,781; in Africa, Kilimanjaro, 19,780; in Australia, Mt. Kosciusco, 7,328 feet.

Volcanoes.—Among the violent processes of nature is the expulsion from the interior of the earth of steam and hot vapors, molten rock or lava, and more or less finely divided bits of lava called, according to the size of the pieces, pumice, ash, or dust, which is spread over the surface of the land or on the sea-floor. Sometimes the lava flows gently from the orifice, or crater, but often it is accompanied by explosions of steam, which are a prominent feature of the eruptions of Vesuvius, or by outbursts of gases such as destroyed the city of St. Pierre in Martinique. Whether quiet or explosive, these phenomena are called volcanic eruptions. When the lava and ash poured through the crater are heaped up around the opening, the material in many cases is built to a great height, resulting in a volcanic peak.

VESUVIUS, 1906

The causes of volcanic eruptions are not well understood, but steam has undoubtedly something to do with the production of volcanic activity. The distribution of volcanoes near the margins of continents in mountainous country, or on the sea floor, frequently in chains, indicates that they are formed by the same forces that produce mountains.

Volcanoes are found in all parts of the world, but many of them have lost their activity and are extinct. They are defined as active when they are more or less frequently in eruption, and as dormant when they have not erupted for a long period, but show indications that they may awaken again. Vesuvius was thought to be extinct when it suddenly burst into activity in 79 A.D. After the normal types of eruption have entirely ceased, volcanoes may emit hot vapors and steam, with hot water, for centuries.

There are also great outflows of lava from fissures, which do not form mountains, the lavas being so fluid that they flow far and wide, covering vast tracts of country with lava sheets, as in the basin of the Columbia River, in Idaho and the neighboring States. Where the lavas are less fluid they are blown into myriads

VOLCANIC ERUPTION IN JAVA

of pieces, large and small, and fall around the crater, and the mountain thus produced is called a cinder cone or an ash cone. The term volcanic ash does not mean the residue left by combustion, but the great quantities of dust and other finely divided lava that are blown thousands of feet into the air. Sometimes the molten matter is forced up through long rifts between the strata and hardens into rock. In this way the Palisades of the Hudson were formed.

In accounts of eruptions one often reads of flames and ash; but students of volcanoes agree that there is little combustion in a volcanic outburst. Steam forms the greater part of the vapor and gas emitted. Almost the only inflammable gas in these erup-

tions is believed to be a small amount of hydrogen, but its quantity is insufficient to contribute to the spectacular features of a volcano by its burning. What appears to be flame in an eruption is usually the reflection of molten lava from the under side of clouds above.

Along the western coast of the Americas are many great volcanoes, of which not a few in Latin America and Alaska are very active. In the United States and Canada the number showing even slight signs of activity is small. Among the most famous volcanoes are Vesuvius, in Italy, whose eruptions, studied for 2,000 years, have sometimes been terrific. The first one recorded, in 79 A.D., overwhelmed the towns of Pompeii and Herculaneum. Stromboli, one of the Lipari Islands, has been called the "Lighthouse of the Mediterranean," because it is always active and illumines the sea for miles around at night. One of the largest volcanoes is Etna, in Sicily, with craters not only on the top, but also on the sides, where small cones have been built by eruptions. The active volcanoes of the Hawaiian Islands are in the island of Hawaii, the highest being Mauna Loa and Mauna Kea. A great number of oceanic islands have been formed by the outpouring of lavas, the increasing accumulations finally appearing above the surface of the oceans. Iceland, Japan, Java, Sumatra and other parts of the East Indies, are still fields of very great volcanic activity.

Among the greatest eruptions of recent years are those of Krakatoa, between Java and Sumatra in 1883, perhaps the most stupendous within the period of human history; Taal, in Luzon, Philippine Islands, in 1911, and Katmai, Alaska, in 1912.

Earthquakes.—In connection with mountain-building and with volcanic eruptions, the rocks are often subjected to so great and sudden strains that they break, the blocks moving past each other, often under great pressure. This movement sets up vibrations in the surrounding rocks, which may be felt as an earthquake. They range all the way from shocks so feeble as to be detected only by the most delicate instruments, called seismographs, to those so violent as to change the surface of the land and sea-bottom, destroy much property and many lives, and be transmitted half-way around the earth so as to be easily studied by the aid of instruments.

At one time or other every part of the world has felt disturbances, although the areas so violently agitated, within the historic period, as to destroy human life and property, are perhaps not more than a small fraction of the whole surface. There are large regions where earth movements, or tremors, are of daily occurrence in some locality or other, such as parts of Japan and Venezuela. Seismographs record some 3,000 of these movements every year in Japan, but most of them are so slight that they can be detected only by the delicate instruments invented to record earth movements; and while Japan is a land of earthquakes, only forty or fifty very violent and destructive shocks have been recorded there since the fifth century.

Earthquakes originate usually in regions where mountain-building is in progress, although sometimes their starting-point is in lowlands in the heart of continents, as in the case of the New Madrid earthquake in the lower Mississippi valley; and in other instances the effects of earthquakes originating near the oceans are felt to the heart of the continents, as happened in the Charleston earthquake of 1886, when the earth-waves were recorded in southern Ontario and to the west of the Mississippi River. The opening of cracks in the earth usually accompanies these movements. Occasionally the fissures are wide enough to engulf houses, as in the Japan earthquake of 1891. The destruction of life is sometimes appalling. Thirty thousand persons perished in the Lisbon earthquake, twelve thousand in the shocks that destroyed Caracas, Venezuela, and almost as many Japanese lost their lives in the calamity of 1891. The San Francisco earthquake of 1906 caused, with its attendant fires, great loss of life and property in a narrow north-south zone along a fault passing through the city.

Earthquakes originating under the sea have sometimes involved the people of the neighboring coasts in dire calamity by great waves, wrongly called "tidal" waves, that suddenly roll in upon the land, causing great destruction. The shocks travel through the rocks at the rate of about three miles a second, gradually growing feebler until they finally disappear. These catastrophes cannot be averted, but the governments of earthquake countries, like Japan, are making efforts to secure all possible information as to the causes of the disturbances, and to teach

the people what kinds of structures will best withstand severe earth-movements. They warn them against building their homes on the banks of rivers or the edges of cliffs, where they are most likely to be destroyed.

Seaquakes may cause great inconvenience and danger. Before the days of the wireless telegraph, vessels were occasionally lost in parts of the ocean where no storm occurred, sunk by the blows of submarine earthquakes transmitted upward through the incompressible water. Others reported striking rocks, where soundings showed a depth of thousands of feet. Cables are often severed by the movements that cause these seaquakes. Thus earthquakes have repeatedly broken the cable running from Zante, Greece, to Crete, and at the breaks, where previously the bottom was practically flat, the difference of depth between bow and stern of the repair ship was found to be more than 2,000 feet. In some places submarine earthquake precipices 5,000 feet high are known.

Plateaus.—Plateaus are extensive, more or less even-surfaced areas that appear high from at least one side. They commonly, but not always, flank mountain systems, like the Piedmont plateau east of the Appalachians and the Appalachian plateau west of them. The great western high plateaus of North America are bounded on the west by the Cordilleran mountain system, and on the east by the central plains. The Iberian plateau, forming Spain and Portugal, has the sea on all sides except the north. Much of South Africa is a vast plateau. The great Thibetan plateau of central Asia is flanked on the south by the Himalayas. Because of their altitude plateaus are often much dissected by streams, so that only remnants are left, as is the case in the Scottish Highlands.

Except in low latitudes, plateaus are too cold to attract man, and some of the tropical and sub-tropical ones are too dry. Where the climate is good, however, as on the Mexican plateau, the conditions for habitation are extremely favorable. On the whole, it may be said that plateaus do not favor the development of a high degree of culture or strong political organizations. Their surface is more likely to be fit only for grazing, so that we depend upon them for much of our meat and wool.

Plains.—Most of the world's peoples, perhaps as many as nine-

tenths, live on plains, whose relief is usually low, and which give the utmost freedom of movement. From the earliest time they have been the great land highways of the earth. Their soil is commonly better than that of the uplands, so that most of the agriculture and cattle raising are conducted on them. The larger plains possess great navigable rivers, along which are situated the most important inland cities; and where the lower courses of the streams are of depth sufficient for ocean carriers, busy ports have arisen at the mouths of the rivers or as far inland as possible.

Of the many kinds of plains, three are of special importance. Coastal plains border parts of certain of the continents, such as the Atlantic and gulf plains of North America. Vast interior lowlands may open up the heart of the continent, as the great central lowland of the United States and the plain occupying most of European Russia. Finally, the flood-plains of the larger rivers determine the economic, and often the political, history of certain centrally located regions. The Mississippi valley, part of the great Hungarian plain and the rich plain of the lower Danube in Bulgaria and Roumania are important illustrations.

Valleys.—A few special features of land forms deserve notice. Irregularities of the land surface are due either to projections above the general level, or to valleys excavated below it. Most valleys owe their presence and characteristics to streams, and all have been molded by running water. These valleys range in shape from the canyons or gulches of steep mountain sides to the broad, open valleys occupied by great rivers. The narrower and steeper rock valleys are seats of power development; and along their sides often outcrop valuable mineral deposits, so that much mining is located in mountain valleys. The great rivers flow over flood-plains which they have laid down in broad and shallow valleys.

Valleys through which navigable rivers flow are the most easily developed parts of the continents. They were the first to be settled when man began to carry his industries and commerce into the interior of the continents. Thus great river valleys came to be called the creators of history, because in the early days of development it was in the valleys of the Nile, Ganges, Indus, and other large rivers that the human race made much of its early progress.

A great river, with its branches and smaller tributary streams, forms a river system; and the area over which the water is gathered into the master-stream and flows to the sea is called the water-shed, or river basin. That of the Mississippi occupies approximately one and one-quarter million square miles.

Divides.—The boundary between slopes leading to different streams is called a divide. It may be the crest of a mountain range, or at least a conspicuous ridge. Frequently, however, on plains and plateaus the divide is almost or quite undistinguishable. In this case the course of the brooks is uncertain and variable. There are rivers in Canada whose divide passes through some small lake, from which outlets feed streams on either side of the divide. Another illustration is Two Ocean Pond, in the Yellowstone National Park, where a bit of water is diverted sometimes toward the Pacific and sometimes toward the Atlantic. In Canada, the divide is often called the "height of land."

Lakes.—The irregularities of the earth's surface include many depressions below the general level, into which drainage is drawn. The water bodies that fill such depressions in all except the most arid regions, are called inland seas (Caspian, Dead), lakes, or, if they are small, ponds. Most of these lakes overflow their basins, and their surplus is discharged by streams into the sea. Under such conditions the water remains fresh; and it is from normal lakes and from rivers that the oceans derive their "salt." But there are many water bodies, ranging from the great Caspian Sea and the smaller Dead Sea through Great Salt Lake and the small Salton Sea of southern California, whose waters have no outlet, and have gradually become saline from the constant inflow of salts in river water. These are all situated in arid and semi-arid regions, where evaporation from the lake surface is so great that the inlet streams cannot cope with this loss. Such lakes are commonly of no commercial value. Of the four mentioned above, all except Great Salt Lake lie below sea-level. See Flat-Globe.

The origin of lakes is varied. Thousands of small lakes and ponds are capable of furnishing water-power and water supply for our use. Many are the centers of delightful resorts for summer or winter. Large lakes are very useful in commerce, because they permit the transportation of freight in the interior of the continents at small cost. The largest system of lake navigation

in the world is provided by the Great Lakes of North America, on which steamers carry at low freight rates many times the tonnage of commodities that is borne through the Suez Canal.

Coasts.—Coastal outlook is a prime requisite of every nation, if it would develop political and economic strength. But some coasts are so difficult of access from the interior, or so low and harborless, as to be sources of weakness to a country rather than of strength.

In general, coasts are of two classes. One is rocky, abounding in headlands and bays, reefs and islands, and may be abrupt and forbidding or low and accessble. The other is so low as to be nearly flat, sandy, straight, often with sand bars off the shore, behind which lie lagoons or marshes. The water off the first is bold, and deep-draft ocean vessels can enter its good harbors; the water off the second is shallow for a long distance seaward, and in some instances vessels must anchor in the open sea, and transfer their cargoes to flat lighters, by which the freight and passengers are carried to land. In the United States, the New England coast represents the first class, that of Texas the second. The insecurity of Galveston is due to its location on an off-shore bar; and elaborate engineering precautions have been necessary, not only to enable vessels to dock in safety, but to prevent repetition of the terrible disaster of September, 1900, in which the city was all but annihilated.

The rocky type of embayed coast furnishes many of the finest harbors in the world, like those of San Francisco and of Halifax, Nova Scotia. But it often happens that difficult railway transportation inland from such harbors hinders the commercial development of the port; or it may be that there is no country back of the harbors whose characteristics favor economic activity on a large scale. The Norwegian fjords are examples of such harbors.

Our Atlantic coast, from Long Island and New York southward to the Mexican border, is fortunate in having some of the best features of both classes of coastal belts. The country inland from the sea is low and accessible, and approach by rail from the interior of the continent is not difficult. But instead of an unbroken, straight shore-line, we find here and there harbors such as Long Island Sound, New York Harbor, and Delaware and Chesapeake Bays, by which vessels can penetrate far inland,

carrying the low freight costs of ocean transportation and lessening the length of expensive rail haul for goods to and from the interior. The English harbors are much like ours in this respect; and their value is enhanced by the range of the tide, so that at high tide vessels can dock many miles above the submerged mouths of the rivers.

The "Glacial Accident."—Mention has been made of the work of the great ice sheets that, only a short time ago, covered northern North America and Europe. The effects of this accident to the general development of the land have been marked upon man's activities. One of these is through the soils, and agriculture owes much to the visits of the ice. The soils of glaciated regions were made by mixing many kinds of rock fragments together in the grip of the ice; and these mixed soils, not always rich, are very lasting, not becoming poor with constant cultivation as alluvial soils frequently do.

Moreover, the relief of the land has been made less rugged by the smoothing and planing down of rocky hills and the filling up of valleys by gravel and sand. Thus the country has been made more accessible. Streams have been turned into lakes in thousands of cases, resulting in the storage of water for man's use. Even navigation has been aided, for it is largely to glaciation that we owe the Great Lakes. The ice created no new land forms of importance, but it altered old ones in a way often of benefit to us. Long Island, so necessary to New York City as a resort and as a supply depot for garden vegetables, would be but an insignificant island of soft clay, were it not for the mantle of glacial deposits causing it to have a length of one hundred and twenty miles. It is interesting also to know that, if the glacial gravels were to be swept away from Manhattan Island, New York City, all the wholesale and financial portions of the world's metropolis would disappear.

The Life History of Land Forms.—It may not be amiss to point out that all land forms have a history, developing in an orderly way from what we may call infancy, through youth and maturity to old age. The precise effects of topography upon human affairs depend almost as much upon the stage in life history of mountains, plateaus, plains, rivers and coasts, as upon the nature of those forms. Thus young mountains are the most complete land

barriers, and their formidable character does not begin to lessen appreciably until maturity is passed. Old mountains have no such importance. The Himalayas are examples of the first, the White Mountains of the last. Rocky coasts, on the other hand, are most useful when young, while their harbors are unfilled with débris swept in from headlands. Rivers are best for power when young; but for navigation we rely upon those that have reached old age, or at least maturity. Thus every nation depends for many of its characteristics, not merely upon the kinds of land forms within its borders, but upon their life history.

THE ATMOSPHERE

General Character.—Completely inclosing the rock and water portions of the earth is a gaseous envelope, some hundreds of miles thick. It is so much a part of the earth that it moves with the latter through space, and rotates as the remainder of the earth does. It is this gas mixture, friction with which heats meteors to incandescence. It is of the utmost necessity to life, vegetable and animal, low and high. The kinds of gas composing it are not many—nitrogen, nearly four-fifths, oxygen, about one-fifth, and small quantities of water vapor, carbon dioxide, and other less important gases. In addition there is a very variable amount of dust. Rain and snow purify the air by bringing these dust motes down to the earth, whether they be dirt or low forms of life.

Oxygen is the life-element, and its chemical action upon blood impurities is necessary to sustain all higher life by burning these impurities off. This is what occurs when we breathe. Nitrogen gives density to the air, and dilutes the oxygen. Aviators take advantage of its presence in lifting their machines from the ground by engine power. The small amount of carbonic acid is found chiefly near the ground, and is needed by plants for the chemical changes undergone by them in growing. Water vapor is present in the dryest air, to some extent, and human life could not exist without it.

A very large part of the atmosphere is within a few miles of sea-level, so that man cannot breathe at higher altitudes, and the density of the air is insufficient to float balloons or to sustain airplanes, no matter how powerful their engines.

Temperature and its Measurement.—We speak of the air as hot, warm, cool or cold, and our sensations reflect, although not accurately, a real condition. The decrease of temperature from the tropics to the polar zones is very slow; but as one ascends from sea-level or from the land it is very rapid, and it is for this reason that aviators wear such heavy clothing, even in mid-

summer. Not only does the temperature vary greatly from place to place, but from time to time in the same place; and the amount and suddenness of this change often affects seriously the possibility of growing certain crops. Finally, temperature varies from season to season—very slightly in some areas near the sea, like Manila, very greatly on land far removed from ocean winds, like eastern Russia.

It is necessary to keep track of these temperature changes, and to do this we must measure them by some standard. We do this by means of thermometers, the chief type of which is familiar to everyone. What is not so well known, however, is the nature of the standard. The English-speaking countries have long used a scale called the Fahrenheit, in which the freezing point of water is 32°, the boiling point 212°, and the interval between the two therefore is occupied by 180 divisions. According to this scale, zero is 32° below freezing. The other advanced nations of the world employ a decimal scale called the Centigrade, in which freezing is at zero, boiling at 100°. Thus 0° Centigrade is the same as 32° Fahrenheit, and 100° Centigrade is 212° Fahrenheit.

The first system is clumsy, and like other measurement methods not based upon the decimal system, will gradually be abandoned. No scientific work is recorded today on other than a decimal scale. It is worth while, therefore, to see how we can convert one thermometer scale into the other—for instance 77° Fahrenheit into Centigrade or 20° Centigrade into Fahrenheit. To change Fahrenheit thermometer reading to Centigrade reading just subtract 32°, then multiply the result by 5/9; to reverse the change, first multiply by 9/5, then add 32°. Thus—

77° F. = 25° C., by the thermometer.

(1) $77 - 32 = 45$.

(2) $45 \times 5/9 = 25°$ Centigrade.

20° C. = 68° F., by the thermometer.

(1) $20 \times 9/5 = 36$.

(2) $36 + 32 = 68°$ Fahrenheit.

In practical work, it is worth while to have a permanent record of temperature changes. These we make on the thermograph, an instrument having a revolving paper, on which the changes for twenty-four hours are recorded by a pen attached to an arm that moves as the temperature goes up or down.

It is also necessary, in order to understand the characteristics of climate, to record on maps average temperatures at various places. This is done by connecting by lines all places having the same average, and the line is called an "isothermal line," or an "isotherm." On page 55 will be found a map of the world showing the climatic belts that depend upon the average temperatures for January and July.

Pressure and its Measurement.—The air has weight, hence presses upon us from all sides. This would be fatal, were it not that the air in cells within our bodies has the same pressure. At sea-level, in good weather, this pressure is nearly fifteen pounds on each square inch of surface. As we ascend from sea-level it is less, or the air is "rarer"; and if we rise too rapidly we suffer from nose-bleeding and dizziness. If we descend too rapidly into deep mines, the increased pressure makes our heads ache. It is this rapid decrease of density of the air upward that limits the altitude that can be reached by balloons and airplanes.

The density of the air changes also in all places, from hour to hour and from day to day, and this has direct connection with the weather. In fine weather the air is dense, in foul weather it is lighter.

It is necessary to measure this density, and this is done by the barometer and the barograph. The former is a glass tube filled with mercury. The upper end is closed and the lower end, about thirty-one or two inches below, is placed in a dish of mercury. The pressure of the air on the latter holds up the column in the tube; hence when the air is dense and the pressure greater, the column will be higher, and we say "the barometer is high." This is characteristic of fair weather. Barographs record permanently the pressure changes, in much the same way as temperature changes are recorded. We state the records of pressure as so many inches of mercury, whatever the height of the column may be as measured in inches. The decimal system is popularly used in the English-speaking countries only in representing parts of an inch in tenths and hundredths. Scientists everywhere use the metric system of measurement.

Moisture.—There is no such thing as dry air; some water vapor is always present, even on deserts. Air can contain only a certain amount of this vapor, without causing the latter to con-

dense and become drops of water. Hot air can contain much, cold air little. Hence if warm air that has considerable moisture is cooled, a temperature may be reached at which, instead of being invisible, it will become visible in the form of drops. If these drops become too large, they fall as rain. It is evident, therefore, that the ability of the air to keep its moisture in vapor form has much to do with weather.

Dew and Frost.—Often at night the ground, and the air near it, are chilled rapidly. If the air contains much moisture it is condensed in drops, often of exquisite beauty, and dew forms. When the temperature drops appreciably below 32° F., the result is frost instead of dew. Both are more likely to appear on clear than on cloudy nights, because the earth chills more rapidly then. Windy nights are less likely to be accompanied by dew or frost than still nights, because the moving air has no chance to deposit its drops or form its frost crystals. We speak of dew as "falling"; it does not fall, but forms where we see it. We are accustomed also to say, when we see a heavy dew in the morning, that good weather will follow. It probably will, because there was not enough moisture in the air to keep the earth's heat from passing off rapidly during the night. This effect of the abundance or scarcity of moisture is noticed on cloudy and clear days, for nights following the former are not so likely to be cold as those following the latter.

Fog.—Fog is formed by the cooling of warm moist air, at and near the land or sea surface. Over large areas, and for heights ranging from a few feet to a thousand or more, myriads of drops appear in the air, shutting out the vision of distant objects partially or completely. These drops have a tendency to form around dust and smoke particles, and cities thus afflicted are more likely to have frequent fogs than the surrounding country. Sometimes in valleys the still air has cooled so far at night as to produce fog there while none has been formed on the upland; and valleys in the same way may be visited by frost on a night when the higher lands are free. On the ocean, mixtures of cold currents with warm often cause fog by cooling the moist warm air; and when icebergs add their chilling presence, as those brought down in early summer by the Labrador current to the Grand Banks, fogs are doubly serious.

Nimbus and Fracto-Nimbus

Cumulus and Fracto-Cumulus

Cirrus

Fracto-Status

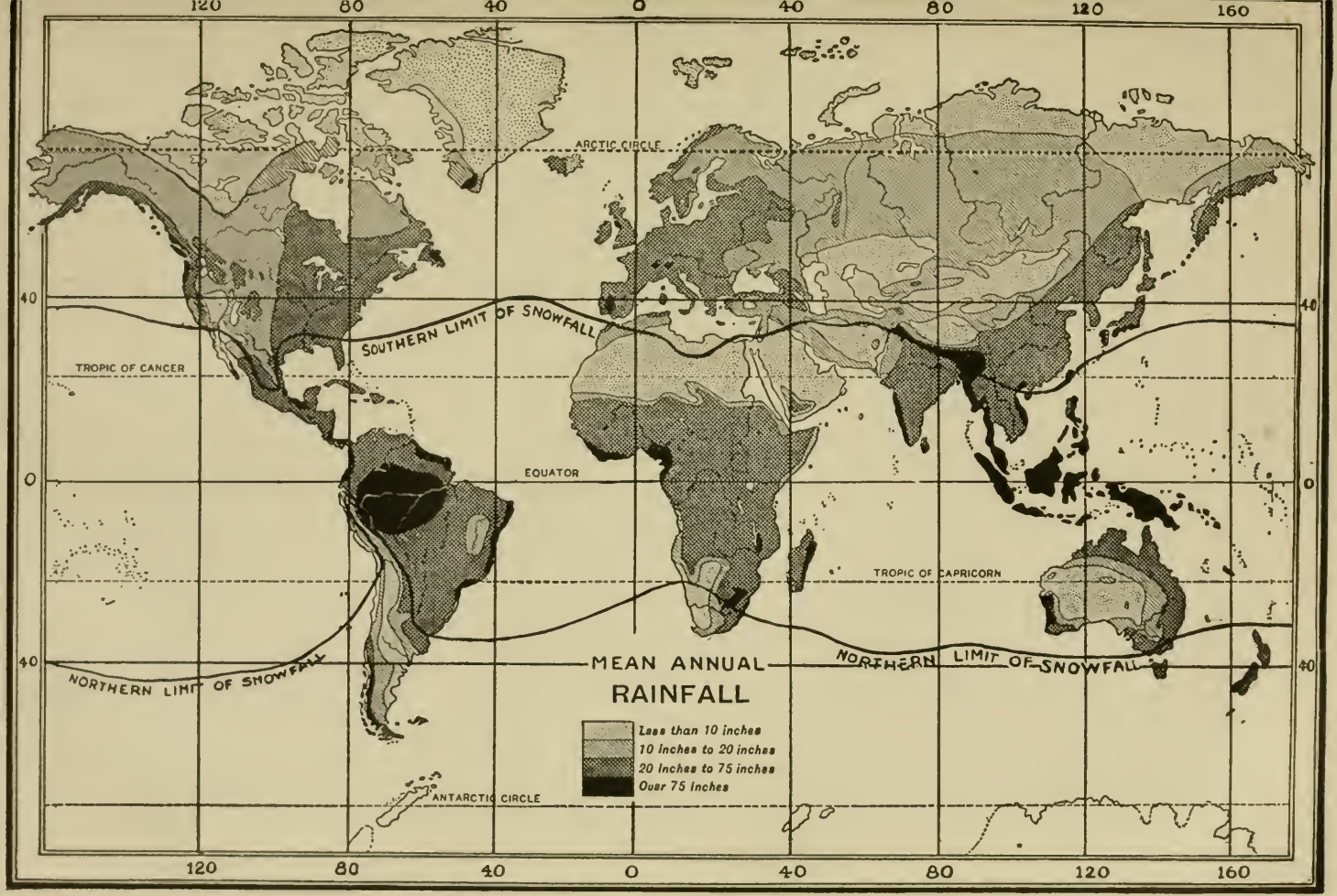
TYPICAL CLOUD FORMS

Clouds.—Clouds are like fog, but lie higher in the air; and between their bases and the land or sea below, the air is comparatively clear. They are formed in several ways, but chiefly three. Water vapor rising from the sea or from large water bodies may be borne aloft to a moderate height, where, although the temperature is not low, there is now too much moisture and condensation takes place. Or a strong upward current of air containing only a moderate amount of moisture, as over the land, may rise so high as to encounter a temperature much lower than that nearer the earth, and some of the moisture must be condensed because the capacity of the air for vapor is reduced by cooling. Or, third, warm, moist air may be blown over a cold region or against a cold mountainside, with the same result.

Clouds have distinct forms, and these are of value as indications of weather conditions that will soon obtain. The chief countries maintaining weather bureaus have devised a cloud-classification which includes four main types and nine or ten subordinate and combination forms.

Cumulus clouds are rounded masses like heaps of wool with flat bottoms, usually formed at the top of an ascending column of air at moderate height. Cirrus clouds, light and feathery in appearance, are formed at heights of several miles, and consist of tiny ice crystals. The former are usually, but not always, associated with fair weather, and often form at the rear of a storm as the weather becomes better. Cirrus clouds are the highest of all. They take various forms, such as mackerel clouds or flocculent masses of white, feather plumes, and streamers called "mares' tails" by sailors. Rain or snow is apt to follow the last named forms. As a rule, gathering clouds indicate rain; disappearing clouds are the sign of fair weather. And as storms move in temperate latitudes from west to east, both may be looked for in the west. Stratus clouds extend in long horizontal layers, and are formed much nearer the earth than are cirrus clouds. Nimbus clouds are widely spread cloud masses from which rain or snow is falling. Their bases are vague, and frequently the rain can be seen falling in streamers from them, in an approaching shower.

Rainfall.—This term, called "precipitation" by weather bureaus, includes rain, snow, hail and sleet. When water vapor



RAINFALL OF THE WORLD

condenses so far that the particles of water become too large for the air to hold them up, they fall to the earth in one of the forms above mentioned. The vapor crystallizes into snowflakes if the condensation occurs at a temperature below the freezing-point. Sleet is half-melted snow. Hail, or frozen rain, usually occurs during summer thunderstorms. As a rule hailstorms consist of alternate layers of snow and ice.

The rainfall of the United States is heaviest along the North Pacific coast, the Gulf coast and the Appalachian mountains. In these regions it is not far from 80 inches a year. East of the 100th meridian it is from 25 inches to 40 inches in the northern half and from 40 inches to 60 inches in the southern half. In the western highlands it is from 10 inches to 15 inches. There are a few regions in which rain may not fall for many years, like the nitrate deserts of Chile. In contrast to this, Assam has a record of 900 inches in one year, mostly during five months.

In semi-arid regions, where the rainfall is less than 20 inches a year, all or nearly all falls in one short season. The time of that season seriously affects agriculture; for if the rain falls during the winter, a resting stage of crops, or during the late summer, when crops are ripening, little can be raised. But if a sufficient amount falls in the spring, the germinating and growing season, far larger crops will result.

Rainbows, Halos, and Mirages.—When the sun shines on drops of falling water, an arch of light is formed in the sky opposite the sun, showing the colors of the prism. This arch is called a rainbow. The sun's rays are refracted by each drop of water, and the white sunlight is broken up into the primary and secondary colors that form it. At times, at the end of a summer shower, one may see a second rainbow inside the first, with the colors reversed in order; and occasionally even a third appears. For rainbows to form clearly, the sun must be near the horizon.

Around the sun or moon, when the air is whitening with gradually forming cirrus clouds, rings may be seen, some of those occurring during the day being colored. These are halos, and are useful to the extent that they emphasize the presence of forming cirrus clouds, and thus often portend a storm.

In flat desert regions, on hot smooth pavements, and some-

times on the water, one may see during the warmer parts of the day curious distortions and repetitions of real objects. Sometimes the latter "loom" up, or grow extraordinarily tall; sometimes, below objects and somewhat separated from them, images of the objects will be seen; or it may be that distant low sky is seen below as an apparent lake, and many a weary and thirsty traveller in the west has thus been lured on and on, toward lakes that never existed. The western shores of Great Salt Lake abound in these illusions or mirages. At times the image is seen above the object, and inverted, as a ship that has gone below the horizon, visible in inverted form for some minutes after being lost to direct view.

Winds.—Winds are the chief factor not only in carrying warmth to cold regions and cool air to hot regions; but in distributing the moisture that rises from the sea over the greater part of the earth.

Air when heated expands and becomes lighter than the surrounding air. Being pressed on the sides by denser air, the lighter rises to such level as encounters air of its own density. The heavier air around it presses in and, heated in its turn, rises after the first. The difference in atmospheric density or pressure thus causes the air to flow, and this flow is wind.

Wherever high pressure prevails the air moves towards a region of low pressure. These differences in atmonpheric pressure not only cause the winds; they also determine their direction and force.

Regions of high and low pressure are indicated on the weather maps by the use of isobars, or lines drawn through places having equal pressure. They are designated as "High" or "Low." On these maps arrows mark the direction of the wind; they are pointed away from the areas of high pressure and toward those of low pressure. The average velocity of winds in the United States is 5 to 14 miles an hour. This velocity depends upon the rate of the change of pressure toward or away from a High or a Low. Thus, when the isobars are close together, the wind is correspondingly high. The winds in ordinary storms vary from forty to ninety miles an hour; in tornadoes the velocity is several hundred miles an hour.

Winds are of two classes, forming the general planetary circulation of the atmosphere and the secondary circulation. Along

the highly heated equatorial belt the air rises as in a vast chimney, spreading out at a height of several miles and flowing toward the poles. This region, because it has little ordinary wind, is called the Belt of Equatorial Calms, and has long been known to sailors as the "Doldrums." Toward this belt surface air is drawn from either side, forming the Trade Winds. Because of the rotation of the earth from west to east these winds appear to us on its surface, not as north and south winds but as northeast trades and southeast trades. These winds are constant in many places; but in some regions the heat belts migrate so far north in our summer and so far south in winter, because of the difference in attitude of the surface with relation to the sun, that a locality may be in a trade wind belt during one season and in the doldrums at another. Such winds are then periodic.

Outside or poleward of the trade wind belts are narrow zones of down-draft air, bringing good weather, such as that of southern California and the Riviera in Italy. These are the Belts of Variable Winds and Calms—the "Horse Latitudes" of sailors. Beyond these are the two broad Belts of the Prevailing Westerlies or Antitrades, characteristic of temperate latitudes. These are the regions of modern civilization in general. In these zones the winds are not constant, or even periodic, but variable on account of storm disturbances. This is especially true in the northern hemisphere. These winds should be south and north winds, flowing toward the poles. But the rotation of the earth makes them appear to us as southwest winds in the northern hemisphere, and northwest in the southern hemisphere.

The secondary circulation is composed of local and temporary disturbances of the general one. These disturbances are in the main of two types—cyclonic or stormy, and anticyclonic or fair weather disturbances. The former include the hurricanes, typhoons, or tropical cyclones, and our ordinary storms, called extra-tropical cyclones. Anticyclones, often as violent as storms, occur only in the zone of the antitrades. Winds in cyclones blow inward toward the low pressure center, in this hemisphere in a left-handed or anti-clockwise spiral. Winds in anticyclones blow outward, in a right-handed or clockwise spiral.

Land and sea breezes are local periodic winds caused by the overheating of the land during the day and in summer; the air

over the land rising and a sea breeze flowing in to take its place. Overcooling of the land during night or winter causes the relatively warmer air over the water to rise and a land breeze flows seaward. A gigantic wind phenomenon called the Monsoon is similar to this but has a slightly different cause. In India and some other countries in a similar latitude the northeast trade wind characterizes winter. But in summer the heat belts, therefore the wind belts, migrate so far north as to bring the southeast trades north of the equator. Here they encounter the tendency of all winds of this hemisphere to be deflected to the right, and are turned into southwest winds. These are the salvation of India, where hundreds of millions of human beings depend upon the rainfall of the summer or wet monsoon for the growing of their grain. England has taken extraordinary measures to aid the unfortunate people to live through occasional seasons when this wind fails, and despite all her efforts many starve at such times.

Winds have the utmost economic importance. Trade winds bore the earliest oceanic navigators to unknown shores; they make deserts of low lands over which they blow; and high mountains in their path have heavy rainfall on their windward side, with arid conditions on the other. Winds prevailingly from the sea, especially the antitrades, cause heavy rainfall. Aviators have thus far found themselves much at the mercy of the winds, and even large power vessels must beware the wind that causes too high waves or that starts strong or unusual currents. In the southern hemisphere the prevailing westerlies are called the "roaring forties." They are so strong that sailing vessels from British ports to Australia frequently saved time by continuing an easterly course around the world in the return voyage.

Winds modify the forms of the land surfaces. In the deserts they pile up long ridges of sand called sand dunes. Travelers on the trans-Caspian railroad may see these parallel dunes, like ocean waves, stretching away to the horizon. Winds from the Desert of Gobi have filled with fine dust-like material, called "loess," the valleys of China more than one thousand miles away. More than once the Hoangho has changed its channel because the wind filled it with rockwaste. In the western highlands winds

have drifted rockwaste in places several hundred feet deep. During desert sand storms men and beasts must lie close to the ground.

Storms and Fair Weather.—It has been stated that storms, or cyclones, are bodies of moist air that move spirally toward a central "Low," where the air rises, afterward spreading out radially at the top of the storm. In the northern hemisphere the spiral is left-hand. Storms are of several classes, whose chief differences are in intensity. Thus the least intense is the ordinary temperate latitude storm, which may spread out over a radius of a thousand miles or more. The typhoon, or tropical hurricane, apparently has as much or more total energy, but is confined within a narrow zone, a few score miles across, and thus the wind and rain phenomena are highly intensified, and their destructive force correspondingly great. The tornado is so concentrated that the path of effective violence may be only a few hundred feet broad, but its energy is so great that no meteorological instruments have survived its passage, to record the features of wind, temperature, and pressure. Rain is not necessarily accompanied by a storm, or cyclonic disturbance. In the doldrums, over the ocean and neighboring land, it rains every day; but the only storms are thunderstorms.

The extra-tropical cyclones move along definite paths, in general from west to east, being carried by the antitrade circulation of the atmosphere. Within the storm, which is almost as definite as a railway train hastening across country, the winds have their own local circulation, described above. In any place, as a storm passes to the north or to the south, the wind shifts in a definite way, and it is often important to know, by the weather forecasts and maps, how the wind will change. Some of these storms, starting over either land or ocean, travel most of the way around the earth before dying out; others have but a few thousand miles of passage, starting and dying on land, or on the ocean, or starting over one and passing onto the other. The definiteness of paths of storms, and the frequency with which these paths are followed, cause a large amount of foul weather in certain belts, as northern New England and the St. Lawrence valley, and leave large regions almost entirely without stormy days. In the United States there are five distinct zones of storm frequency. One of these follows

the Atlantic coast at a short distance seaward, turning eastward near Cape Hatteras, and passing out to sea. This is the Atlantic coast path. The other four converge from various parts of the southwest and west, becoming a single broad zone in the Great Lake region, passing down the St. Lawrence basin and across northern New England. In this way the northeastern States are visited by a large number of storms. At New York City the "northeaster" is of the coast type, the "southeaster" is one of the northern series.

Anticyclones, characterized by especially fine weather, are just as real atmospheric disturbances as storms; and although no rain is produced, the wind may rise to as great force as that of a storm. They have their paths, also from west to east but not so regular as cyclonic paths. They are large down-drafts of dense, dry, often cool or cold air, which when it reaches the lower atmosphere spreads out in a right-hand spiral course. In general, cyclones and anticyclones follow each other, and in the northeastern States there are few days not marked by one or the other disturbance. In the Mississippi valley, one finds more of what may be called "normal weather," when the air is not very clear or the west wind strong, and the barometer remains stationary. Most of the "cold spells" and all the real blizzards are anticyclonic, the latter accompanied by snow.

Tropical cyclones are very local and intense, and their paths are not long. They start in the sub-tropics; and there are five water areas characterized by them, all on the west side of oceans. One is in the southern hemisphere, east of Australia; the rest are in the northern hemisphere. Their violence is fortunately limited to about three months each year, different seasons for the different areas, and they are still so dreaded as to influence strongly the rate of marine insurance for vessels crossing the danger zone. The West Indian hurricanes occur chiefly between the middle of July and the middle of October, in which time on the average ten typhoons are formed each year. They rise near the southeastern end of the Caribbean Sea, move northwest then north, frequently across Cuba, then turn northeast along, or seaward of, the coast. The Galveston hurricane of 1900 was a typhoon that sped westward across the Gulf of Mexico, turning northeast in Texas. The route was abnormal, and the path

was continued so far that considerable damage was done in northern New England.

Tornadoes are found only in the United States, chiefly in the Mississippi valley. Their violence is such that all kinds of buildings are thrown down or seriously damaged, that lie in their narrow path. So great is the velocity of objects carried by their wind that weak straws are driven through boards. "Cyclone cellars" as places of refuge are not uncommon in regions liable to their visitation, strong basement rooms fitted up with food and rescue apparatus. Of late, a considerable volume of tornado insurance has been sold; and the business is no longer an abnormal hazard, because the times and probability of visitation have been studied sufficiently to make the risk legitimate. Tornadoes occur during the three months beginning at the middle of March, and usually from two to five o'clock in the afternoon.

Thunderstorms.—The generation of electricity may accompany the rapid condensation of water vapor. The production of electricity often occurs to such degree as to induce frequent discharges of lightning from cloud to cloud, or between the clouds and the earth. Such a disturbance is called a thunderstorm. The discharges of electricity and claps of thunder may be terrific, particularly in the tropics. The rainfall in such storms commonly does not exceed an hour in duration, unless a second storm follows closely the first one.

In the doldrums thunderstorms occur almost every day, over the ocean and near-by land. In temperate latitudes they are characteristic of hot, sultry weather, but may form even in winter. They usually result from cold, dry, northwest winds blowing into a region of warm, moist air. No considerable damage results from their lightning, beyond an occasional fire; but the rain of hail that sometimes accompanies summer thunderstorms is very destructive of green-houses and tender vegetables and other plants.

Aurora Borealis.—The quivering light seen in the north, but sometimes covering the whole sky, is called also northern lights. It is caused by discharges of electricity through the rarefied upper air. The data supplied by many observers seem to show that there is a belt of aurora in the northern hemisphere, the center of the belt passing through Hudson Bay, northern Norway, and Point

Barrow, Alaska, thus encircling the world. A similar phenomenon, the aurora australis, is observed in the southern hemisphere. The height of the aurora above the earth's surface has not been satisfactorily determined, but it is believed that the electrical phenomena occur at a great altitude.

In polar regions, especially, the aurora is very vivid, and exhibits brilliant reds and greens. In lower latitudes it is not only less frequent but generally paler.

Weather and its Forecasting.—The importance of weather in many lines of activity is great. It regulates sailings of even the greatest steamers. Equally it affects pedestrian and wheeled traffic in a city. It causes floods whose yearly destruction in this country totals hundreds of millions of dollars. It guides the buyer of perishable vegetables and berries. Records of its state produced in court determine the truth or falsity of many claims for damage by rain or by collision. In a thousand ways it affects the daily life of the individual, the corporation, the community. It is of the utmost value, therefore, not merely to record faithfully the state at all times of the various features of weather, but to be able to forecast future weather events as far ahead as possible.

The Weather Bureau, through a few elaborate stations and many volunteer observers, keeps most detailed records of the exact state of the weather daily for several hundred localities in this country. From certain of these observations, taken at 8 a.m. and 8 p.m., the Bureau prepares forecasts for twenty-four hours for all the main divisions of the country. In addition, several sets of weather maps are prepared and distributed broadcast. On these maps are placed isotherms, isobars, wind arrows indicating not only direction of wind but condition of sky, and rainfall areas in lines. By studying a series of these extending over a week, one can form a clear idea of the progress of weather phases across country; and it is not difficult, by means of these maps and observation of sky and wind, to make forecasts for one's self that are accurate enough to be of value for business or pleasure.

Many of the important countries of the world publish weather maps, in not a few the maps being issued daily. Some of these are of great precision and abound in detail. In 1914 the United States,

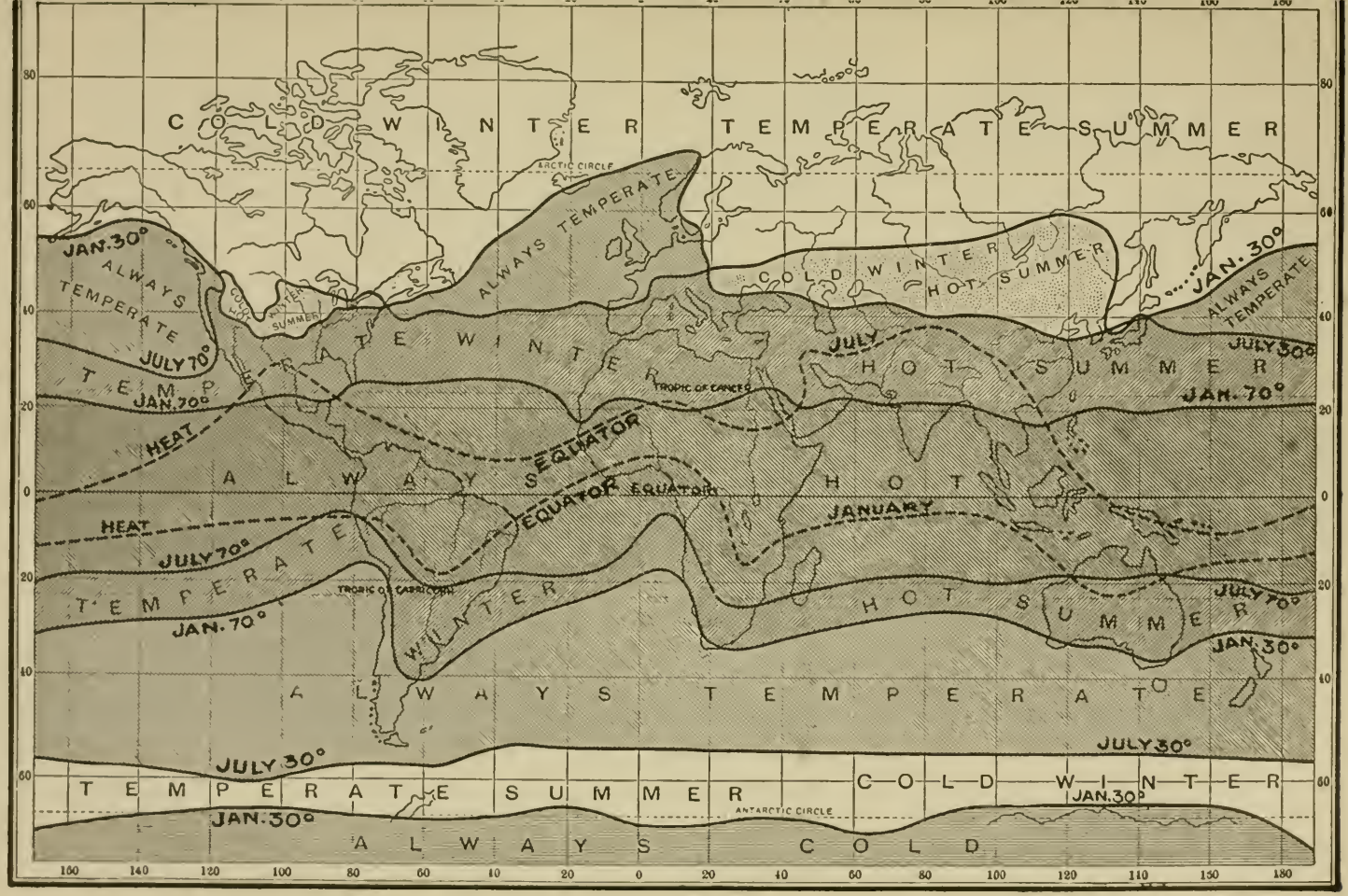
in co-operation with foreign nations and countless ships equipped with wireless apparatus, perfected plans for a daily intercontinental and interoceanic weather map; and the Weather Bureau was on the point of beginning its issue when the hostilities of July stopped all concerted effort. This plan, of so great importance to commerce, is now being put into operation once more.

The accuracy of Weather Bureau forecasts is extraordinary —over 90 per cent. for one-day forecasts. For thirty-six hour ones the accuracy is much less. And in the present state of our knowledge of the atmosphere it is impossible to forecast satisfactorily for a month, or even for a week.

The "Plimsoll Line" and Marine Insurance.—In Great Britain it is illegal to load a vessel below a line conspicuously painted on its hull, and called, after the man whose efforts placed the law on the statute books, the Plimsoll line. This line varies in position according to the season and the ocean. Thus it is lower for winter than for summer, because the greater danger from storms must be met by a lighter cargo. It is lower also for those seasons in tropical waters during which typhoons are expected. In the United States there is no law governing the case; but marine insurance companies, following Lloyds of London, insist upon a rigid enforcement of the requirement. This acts as an effective check upon the rapacity of owners and agents who would endanger ships and lives for the extra income derived from overloading the vessels with freight.

Climate.—The average weather conditions of each region make its climate. No other influences are so great in deciding what animal and vegetable life may thrive in any particular region. The polar lands and many plateaus need only higher temperature to make them teem with vegetation. Desert soils are often fertile, and require only a sufficient supply of water to make them yield rich and frequent crops. In many regions man, not being able to induce a greater rainfall, accomplishes his end by irrigation.

In the humid parts of the tropics excessive heat and rainfall give rise to the most luxuriant vegetation. Man has few needs; he supplies them easily, and his energy and ambition are little developed, because he does not have to struggle for existence. In the polar regions the struggle for life itself is very severe, and



CLIMATIC BELTS OF THE WORLD

man is content if by work he can produce food, shelter, and sufficient skins and furs to keep warmth in his body. The Antarctic regions have no human inhabitants. In the temperate zones, where nature is the powerful ally of human endeavor, man reaches his highest prosperity and best development. Enough energy is required for success to stimulate him to the utmost, but not to exhaust him.

Temperature and rainfall are the most important climatic elements. Temperature decreases not only with distance from the equator, but also with elevation above sea-level, so that frigid conditions may prevail on the high mountains even in tropical regions.

Invisible vapor, rising from water surfaces, is condensed in the cooler air above the earth and falls over land and sea as rain. The sea is the source of rain, and lands near the sea have usually a higher rainfall than the far interior of the continents. Prevailing winds blowing out to the sea from the land are dry winds; on the other hand, when the winds blow from the sea, they often are saturated with water vapor; thus the Amazon valley, in South America, is drenched by heavy rains that the northeast trade wind brings.

Climates may be grouped in several ways, according to the object sought. One of the best is that shown in the plate on page 55, and based upon temperature variability. The zones are (1) always hot, (2) hot summers, temperate winters, (3) hot or cold, (4) always temperate, (5) temperate summers, cold winters, (6) always cold. From the point of view of temperature and rainfall range, there are three types:—oceanic or marine, maritime, and continental. The first is humid and has very little variation in temperature between day and night, or between seasons; the last has wide extremes of temperature, and usually a low rainfall. Manila, Philippine Islands, is an example of the one, and eastern Russia of the other. Maritime climates have more temperature range than the first and less than the third type, and its rainfall is intermediate between them. San Francisco and New York, both good examples, are quite different, however; because on the Pacific coast the prevailing west wind is a sea breeze, increasing rainfall and decreasing temperature fluctuation. The prevailing wind at New York comes from the land.

The climates of the antitrade portions of the north temperate zone are responsible in large part for the vigorous civilization of its nations; for man requires the stimulus that comes from moderate variation of temperature, and from other variations found in the alternation of storms and fair weather.

THE OCEAN

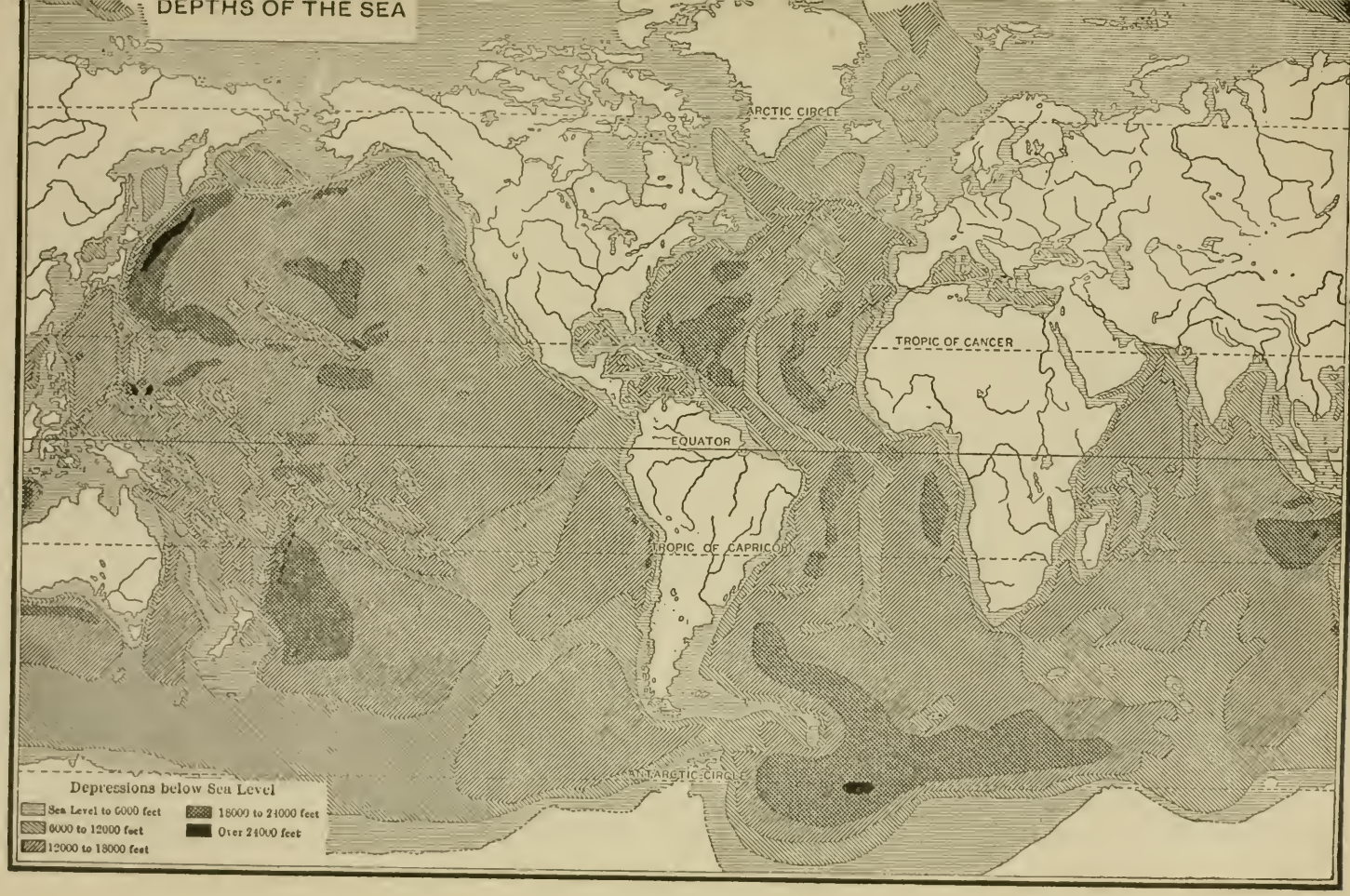
General Characteristics.—The ocean is at once the source of most atmospheric and land waters, and the body to which they ultimately return. Its waters, enriched by the dissolved salts from continental rocks, brought down by streams, is saline, chiefly through the abundance of common salt, which forms three-quarters of the 3.5 per cent. of the ocean occupied by salts. If all the salts could be taken from the sea water and spread over the United States and Alaska, they would form a layer 1.6 miles thick. The salinity is somewhat greater in the tropics than in high latitudes.

The mean depth of the oceans is not far from twenty-five hundred fathoms, or a little more than two and one-half miles. Between North America and Europe the depth of the floor, known as the "Atlantic Plateau," is about 2,000 fathoms, or 12,000 feet. Both in the Atlantic and the Pacific deep holes of more than 4,600 fathoms have been found, and the greatest depth measured is nearly six miles (31,614 feet).

We think of the oceans as basins, but their bottoms are really convex, and only at their margins, where they rise toward the continents, are they concave. Their shape is somewhat like that of a plate, the center of whose bottom is slightly arched upward.

The arms of the sea are variously known as seas, gulfs, bays, and straits. The greater arms, such as the Mediterranean, the Gulf of Mexico, Hudson Bay, and other nearly landlocked bodies of ocean water, are sometimes known as "mediterraneans." The smaller indentations, such as New York Bay, Puget Sound, and many river mouths are of the highest importance to humanity. They are the harbors in which ships carrying the world's commerce may receive and discharge their cargoes, safe from wind and weather.

The sea itself is the free highway of the world's commerce. Transportation over it is less expensive than transportation over land; and a single steamship will carry as much as can be loaded



OCEAN DEPTHS

into several hundred freight cars. Ocean winds transfer both the warmth and the cold of the continents. The vapor of ocean waters mingles with the air; and moist winds blowing over the land supply the rain that furnishes fresh water to all the earth.

The Ocean Floor.—The floor of the ocean is very unlike the land surface. Weathering and ordinary erosion do not affect it, and the only changes it suffers, aside from the continual dropping upon it of sediment from the land, volcanic dust, meteoric matter and organic remains, come from earthquakes, volcanic action, and slow mountain building.

Most of the floor of the ocean proper, beyond the continental shelves, is flat, and its slopes are almost imperceptible. But, beside escarpments due to earthquakes, and volcanic cones, there are two relief features. One of these form the "deeps," and great basins like the Gulf of Mexico; the other is a series of broad, gentle-sided ridges and plateaus. At times in the geologic past, when the continents were very different in outline, some of the great land masses were connected by means of these arches, then high above sea-level.

On the margins of the ocean floor, sediment from the land is constantly being laid down as part of the continental shelf. This has been going on somewhere ever since the first ocean was formed; and most of our sandstones, shales, and limestones originated beneath the sea. In the main ocean basins, where the water is deep and quiet, no land sediments are found; but instead various kinds of soft sediments called "ooze," composed of the minute shell-like coverings of lowly animals. With these oozes are sharks' teeth, volcanic dust, and meteoric fragments that happen to have struck the ocean instead of the land.

We commonly think of the pressure found in deep water as tending to buoy up substances that may have begun to sink. But not only do large and heavy ships, like the *Titanic,* sink clear to the bottom, no matter how deep that may be, but light particles of volcanic dust, after they have become thoroughly water-soaked, descend to the utmost depths.

Temperature.—The temperature of ocean waters varies both vertically and horizontally, just as does that of the air. At the surface, it is about 80° F. at the equator, and decreases to 28° F.

in the polar seas. Ocean currents so shift the water, especially within a few hundred feet of the surface, that the decrease just mentioned is not regular. Bays and seas, more or less inclosed and shallow, are often abnormally warm.

From the surface downward the temperature decreases rapidly except in polar regions; so that within a very short distance it is scarcely above 28° F., the temperature of greatest density of sea-water, and this is maintained to the bottom. Exceptions are found in inclosed seas like the Mediterranean, where the cold ocean water cannot enter freely nor the local water pass out. Here the water has long ago become heated clear to the bottom.

Tides.—Tides are shallow ocean waves of great width, which follow each other at intervals of about twelve hours. They are caused principally by the attraction of the moon, and to a less extent by the attraction of the sun. In mid-ocean the tide waves are about two feet high. But when the tide is forced into shallow water, and especially into river estuaries and bays, with narrowing shores, the wave may be from ten to twenty feet high, and occasionally reaches sixty-five feet. In certain rivers, like the Peticodiac in New Brunswick, Canada, the Seine in France, and the Tsien-Tang-Kiang in China, in-coming or flood tide moves so rapidly that the water rises in a wall sometimes many feet high, and rushes up the river, tearing light boats from their moorings. This is called a "bore." The bore of the last named river is sometimes 25 feet high.

High tides follow as closely as possible the passage by the moon of the zenith, or highest point in the heavens reached by the moon on that day. Where the tide is delayed, because of difficulty in proceeding up a harbor, the difference between the time of zenith passage of the moon and of high tide is called the "establishment of the port." In New York Harbor this is 8 hours and 13 minutes. The highest high tides and lowest low tides come when the moon is full, and when it is new, or twice a month. In the weeks between, the tidal range is less. The former are called "spring" and the latter "neap" tides.

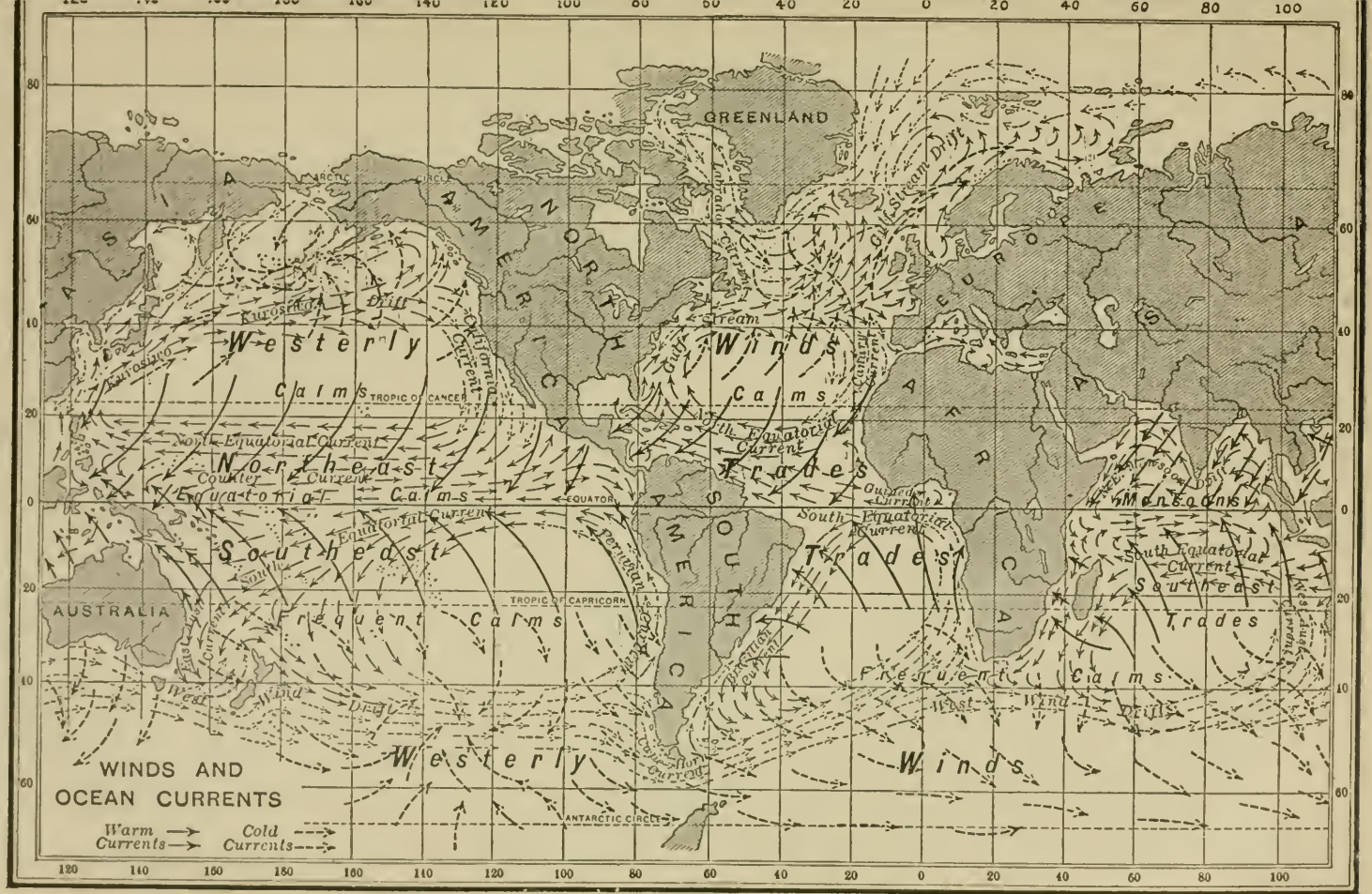
In harbors that are ports, tidal currents are often important in keeping the bottom scoured, and in carrying away sewage. Where tidal currents flow around islands or through straits, a swift and turbulent current, called "rip," may be formed in nar-

row waters, such as the notorious Hell Gate of the East River, New York City. Tides are important to commerce. In many instances vessels must enter on the flood tide and leave on the ebb tide, the ports where they receive and discharge cargo. In some ports, docks at one level for high tide, and others at a lower level for low tide are necessary. Many of the English harbors are far more valuable through their great tidal range, because the water at high tide is deep enough for large vessels farther into the land than would otherwise be the case. Tables of high tide and low tide occurrence are distributed at many ports, and usually are published in the daily papers of seaports.

Waves.—Waves are undulations of the water surface, usually caused by winds, and involving movements extending down into the water sometimes for hundreds of feet. Other waves are caused by submarine earthquakes and volcanic eruptions. In the open sea the water does not move forward, but the motion is like that of shaking a rope, held at one end in the hand. The waves may mount scores of feet in height, although many of the stories of giant waves are exaggerated. The force of such waves, when the water strikes a ship, may be sufficient to twist solid bars of iron or steel several inches thick, to break massive structures, and to tear loose lifeboats.

Approaching the shore, waves become lower and closer together, crowding so that their sides are steep and they look higher than they are. At last, their bases impeded by the rock or sand bottom, they topple over, or "break." Their force then, in storms, may be very great. Massive masonry is ripped apart; cliffs battered by heavy boulders, and on sandy coasts large sections of the shore torn away and carried off, to be deposited elsewhere. Defense against such inroads, by engineering devices, is necessary on many soft shores.

Currents.—The movements of ocean waters extend to almost every part of the sea, as is shown on the Flat-Globe. The great Equatorial Currents flow from east to west with a speed of about two miles an hour. The land masses split the Atlantic currents into great arms which flow north and south. In temperate latitudes the westerly winds carry the drifts of warm water far into northerly latitudes, thereby keeping free throughout the winter harbors that otherwise would be ice-bound. Currents from lower



WIND AND OCEAN CURRENTS OF THE WORLD

latitudes also furnish an abundance of moisture to the air, and the moisture of ocean winds falls as rain.

The Gulf Stream is one of the most important ocean currents, because its drift, crossing the steamship lanes between the United States and Europe, is carried into northern European harbors, keeping them free from ice. Similarly, the Kuro Siwo, or Japan Current, is an important factor in the commerce between the Pacific ports of North America and Asia.

Cold surface currents from polar regions occasionally balance the effects of warm currents from equatorial regions. In the North Atlantic, the Labrador Current carries icebergs into the lanes of transatlantic steamships. In the latitude where cold currents and warm currents meet, dense fogs are likely to prevail. They are therefore a menace to ocean navigation between Europe and America.

Along the shores of the continents currents usually flow prevailingly in one direction or the other. Some are caused by dominant winds, some are eddies from such general currents as the Gulf Stream. They frequently affect shipping, often increase danger of shipwreck during storms, and have much to do with the molding of coasts by their effect upon transportation and deposition of the débris torn from the shores or brought down by rivers.

LIFE ON THE EARTH

Life of the Earth, Air and Water.—Life is the mystery of the earth. Living forms reproduce themselves; other kinds of matter do not. Living beings contain a large proportion of water in liquid form. They cannot exist without it. Warmth is necessary to life; therefore without warmth animals and plants cannot long survive. A few micro-organisms excepted, they cannot survive a prolonged temperature that is materially lower than that of freezing or higher than that of boiling water.

Two great laws govern all living forms, from the lowest one-celled plant or animal to man, most complex of organisms. The chief of these is nutrition. All living things require food. In part the food is to produce the necessary warmth; in part it is to supply the elements of body growth, and the repair of waste. And in the end, when that mysterious phenomenon we call life leaves the plant or animal, chemical change of a destructive sort sets in, and soon the body returns to the earth, air and water whence it came. The solution of the riddle of death of the individual lies in this:—that the race may be permanent and may advance, evolve, there must not be too much overcrowding. If the individual did not die, the race could not advance.

Land life of every sort is governed by conditions of daylight and darkness, of warmth and cold, of the changes of seasons, and of the effects of various natural phenomena. All these in one way or another control the activities of mankind.

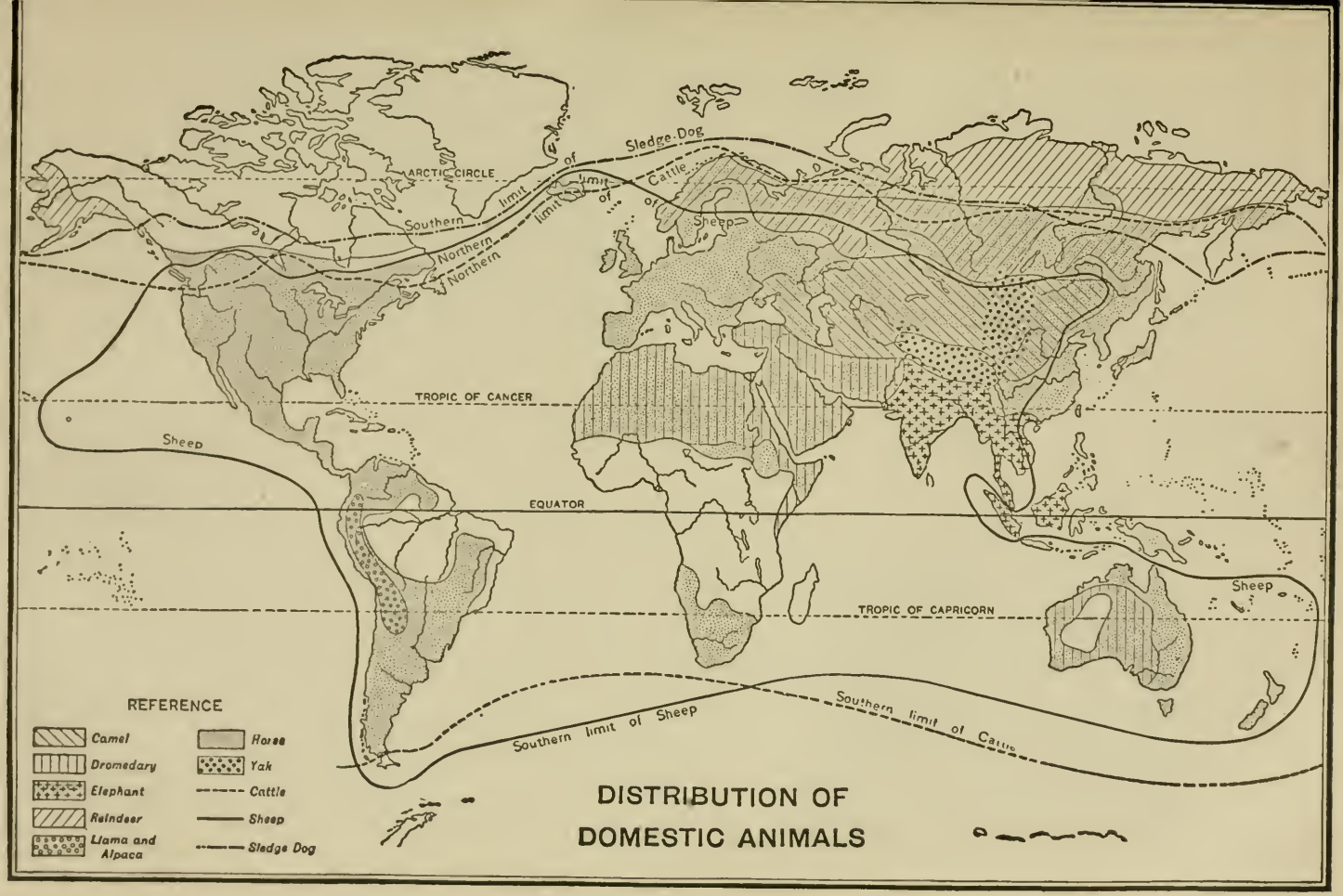
Land life is most abundant in moist tropical regions. In the temperate zones where moisture provides grazing, life is also abundant, but the abundance is due largely to cultivation both of animal and of vegetable species. Life forms in desert regions are very sparse. A few species inhabit north polar regions; very few are found on the antarctic continent.

The life of the land is limited to the surface and a very short distance below it. That of the ocean extends down for a great

distance, many of the varieties living under the high pressure of such depths having strange forms. When brought too suddenly to the surface in the trawls, some of them explode violently, owing to the great difference in pressure between the air without and within their bodies. In the ocean as on the land, the tropics are by far the most populous regions; but polar seas are by no means as barren as polar lands and ice. The air has its own types of inhabitants, but all except a few very low and minute forms are found within a few thousand feet of the ground.

Distribution of Animal Life.—No lands are so desolate that they do not support a variety of life. Peary found flowers and grass, musk oxen and hare on the most northern bit of land which exploration has revealed to us. Stefansson was able to live on the products of hunting, on the most northern islands explored by him. The animals that are most useful to man cover the whole of the temperate regions, and their numbers are increasing in the tropics. The horse, which is found everywhere in temperate and moderately warm countries, has been introduced into the tropical Congo region. In parts of tropical Africa where the tsetse fly is absent, cattle from Europe are being successfully reared. Sheep are raised in most inhabited regions, woolless varieties being reared in hot countries. The range of the dog as a draft animal extends through the northern third of North America, where he hauls sledges, and in many parts of western Europe, where he draws carts to market. The hunting and fishing tribes of northern Europe and Asia use the reindeer as their means of transport. The yak is the conspicuous pack-saddle animal over the Himalayan passes and on the high plain of Tibet. The one-humped camel is the "ship of the desert" in the northern third of Africa, while the stronger bactrian or two-humped camel is the beast of burden in central Asia. The donkey is nowhere else so important as in the countries of the Mediterranean, while in America he is chiefly represented by his progeny, the mule.

The fisheries are the largest source of wealth derived from the wild animals. Canada and northern Asia are the regions from which most of the furs are derived, but the supply has been greatly diminished by overhunting. Civilized governments now protect all wild animals that are useful to man so that they may not be



DISTRIBUTION OF DOMESTIC ANIMALS

exterminated. There are few game laws for the protection of harmful beasts of prey, and most of the larger carnivorous animals, such as the lion, tiger, leopard and others, are doomed to complete extinction within the next few decades.

Distribution of Vegetable Life.—Most human occupations are confined to the regions in which forests and cultivable and grass lands prevail. The best agricultural regions are in the north and south temperate zones. Grassy plains of great extent in the Americas and in Asia nourish countless flocks and herds. Most of the wood supplies of the world that enter largely into commerce come from the great forest areas of the north temperate zone which girdle the land surface between the Arctic Circle and the 30th parallel, making the United States, Canada and Russia the foremost wood-producing countries of the world. Vast tropical forests, especially in tropical America and Africa, yield cabinet hardwoods and dye-woods that are in much demand, and above all, rubber, which is extracted from trees and vines.

The Ages of Man.—It is difficult to imagine a world without man, and yet he has inhabited it for so short a time that it is less than a day in the long history of the earth. He scarcely antedates the recent Ice Age, mentioned earlier. At first he was uncouth, extremely strong of muscle and agile of movement, and appeared to be little above the higher apes with which he competed. But the possession of a superior mind has enabled him to rise far from his origin, although the exchange of brawn for cunning has left him physically weaker. Modern man lives by his head, even though he may spend his life chiefly in manual labor.

The relics of early man are very fragmentary, and it has not always been possible to fix with accuracy the date of their burial. But we have evidence that he passed through several stages in his advance toward "primitive" man as we know him at the dawn of history. These stages we call the Old Stone, New Stone, Bronze, Earlier Iron and Later Iron Ages. Even in the first of these, man had learned to make fires, to paint rude frescoes in caves, to draw and carve animal outlines that are recognizable. He fashioned rude stone implements. Later he learned to shape these better and to polish them, and last came the reduction and fashioning of metals.

The Races of Men.—There are many divisions of the human

race, and detailed study shows that some of them are distinguished from one another only by slight differences. By ethnographers they are classed as White; Black, or Negro; Yellow, or Mongol; Brown, or Malay; and Red, or American Indian. The more common classification reduces them to three in number—Black, Yellow, and White Races, or types.

THE BLACK TYPE

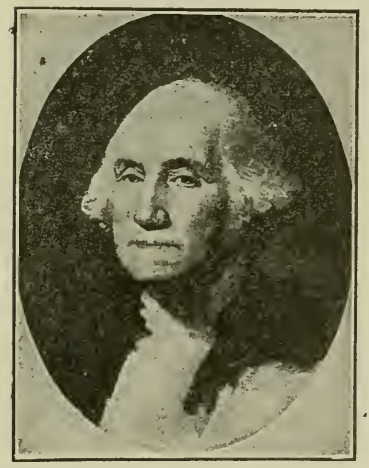
The population of the world is now estimated at about 1,710,000,000, of which over 200,000,000 are believed to be included in the black, 700,000,000 in the yellow, and 850,000,000 in the white types.

The races of the black type are least civilized. The native home of the greater part of them is in Africa, south of the Sahara, and they are classed in the two subdivisions of Negroes in the north, and the Bantus, who inhabit the whole of the great tablelands of that continent south of the Sudan. They are also thinly scattered in parts of southern Asia and the Pacific islands. The aborigines of Australia, the Papuans of New Guinea, the Veddahs of Ceylon, and the Negritos of the Philippines are classed with the Black Race. For three centuries the slave traders carried large numbers of African negroes to the Americas, where millions of them now live. The various peoples of the Black Race are backward in establishing stable political organizations; but those of Africa have shown themselves susceptible of great improvement. They control relatively the smallest part of the world's trade.

LI HUNG CHANG—THE YELLOW TYPE

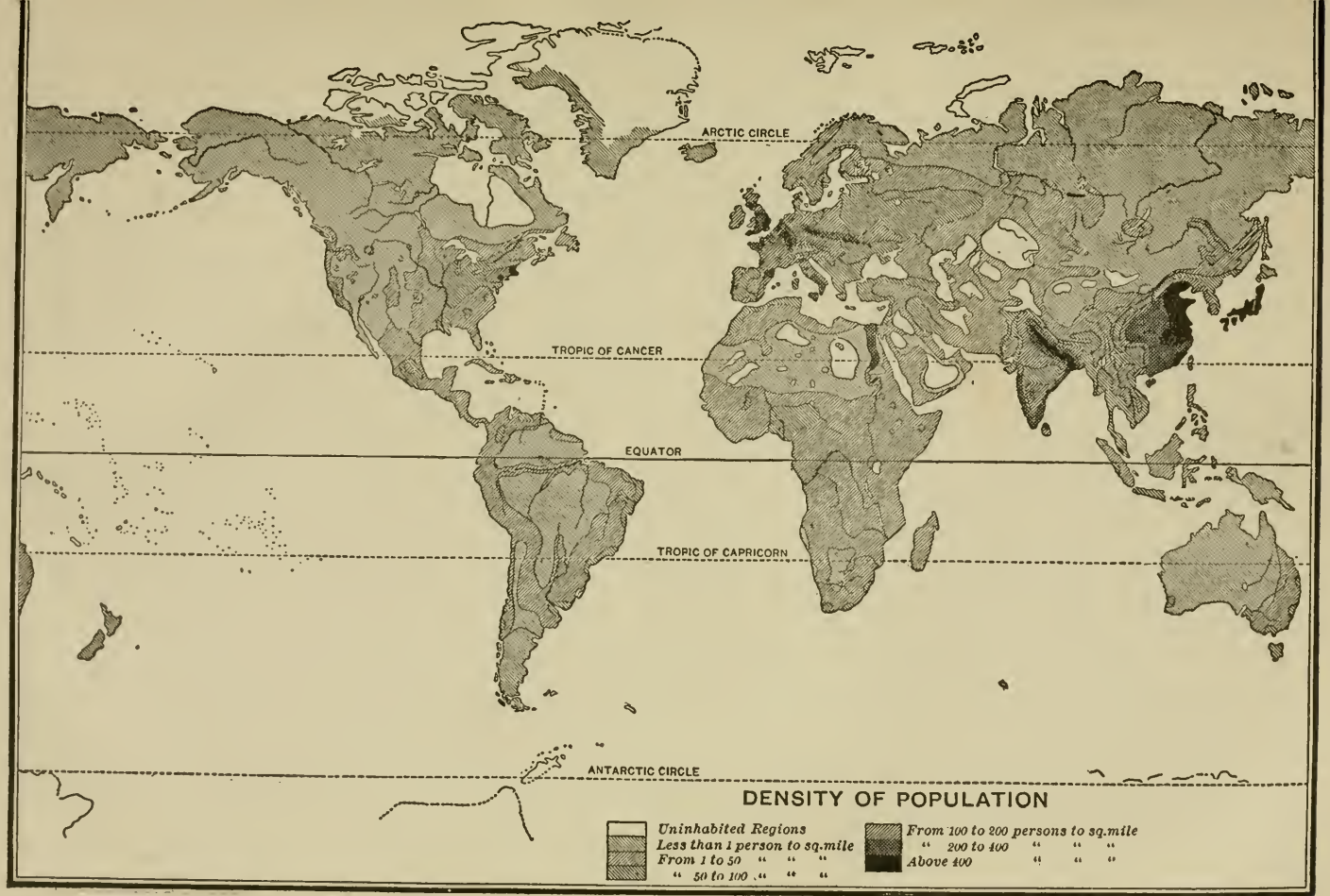
The Yellow Race includes the Mongols of Asia, the Turks and

Magyars of Europe, the Eskimos and Indians of America, and the peoples of the Malay and Polynesian islands. The Mongol, the most important branch of the Yellow Race, includes the Chinese, Japanese, Annamese, and other peoples living in eastern Asia. The Japanese and Chinese are highly civilized, and take an important part in the world's commerce. The Malayan peoples are widely disseminated over the Malay Archipelago. They include the Hovas, the most progressive inhabitants of Madagascar. The Tartars and Turks advanced from the steppes of central Asia and settled in eastern Europe. The Finns and Magyars were also Asiatic emigrants who settled in northern and central Europe.



WASHINGTON—THE WHITE TYPE

The White Race comprises the most civilized, advanced and progressive peoples of the world. It is divided into three great groups: Hamitic, Semitic, and Aryan. The Hamites of North Africa — Berbers, Tuaregs, Gallas, Somalis, and others—are as dark in color as many races of the black type. For the most part they are fanatical Mohammedans, and oppose the introduction among them of western civilization. The Semites include the Arabs, Syrians and Hebrews. The Jews, a religious sect of the Hebrews, are scattered over the whole world. The Aryans are subdivided into the Keltic, Teutonic, Romanic and Slavonic peoples, who inhabit the larger part of Europe. They have long been spreading rapidly, and now occupy nearly a third of Asia. They hold political supremacy over Africa, and have settled there in large numbers. They inhabit almost the whole of Europe, most of the Americas, and the larger part of Oceania. The Romanic races of south Europe have occupied Latin America; the Teutonic peoples of north Europe have spread over North America and Australia, and the Slavonic Russians have occupied the whole of northern Asia. Teutonic peoples command the greater part of the world's commerce. They have done more than any other branch of the human



DENSITY OF POPULATION OF THE WORLD

family to establish government under which life and property are protected and business enterprises are fostered. They have borne the most prominent part in extending civilization and developing natural resources.

Man's Conquest of Nature.—All lower animals collect the food they need, and many of them are also humble manufacturers. The bee makes honey, the spider spins its web, the beaver dams the streams, and many animals build shelters.

In his primitive state, man was much like the animals. He collected the necessities of life, and was a manufacturer on a small scale. Through his intellectual superiority he learned to fashion rude implements to aid him in his work. Animal instinct was the impelling influence that moved man in this primitive stage.

Experience constantly enlightened man. It taught him how to make better implements, and helped him in many ways. One idea that gradually dawned upon him was that if he planted and cared for certain vegetable growths, they would provide him with more and better food than if he depended simply upon wild fruits, grains and roots. He began to till the soil.

Each generation discovered methods for better tillage, found new activities, and invented better ways of doing things. Each bequeathed what it learned to its successors; and so from age to age man benefited by experience that came down to him from his fathers.

The Era of Scientific Progress.—At last man reached the stage in which he was able to inquire into the secrets of nature, and to make the discoveries that multiply the comforts and conveniences of life. This is the era of scientific development. Man's ingenuity is constantly discovering new ways of bending nature to his will. The rapidity of advance during the last few decades has been so great that scarcely any dream of further scientific achievement seems too wild. Our grandchildren may see a greater change in the mechanical instruments of civilized activities than has taken place since our own grandparents lived their relatively simple life.

INDUSTRIAL AND COMMERCIAL GEOGRAPHY

The great strides of occidental civilization, as compared with oriental, have resulted from the application of science in meeting

the world's needs. All the world must be fed, clothed and sheltered. To do this with the least effort and expense, one must possess a knowledge of the earth and its products. Climate and soil determine what foodstuffs may be produced, and where they may be grown to best advantage. Geology points out where the minerals and metals necessary to humanity may be found. Geography teaches the peoples of each region regarding the lands and the peoples of all others. Astronomy guides the mariner on the high seas in carrying the products of one country to the peoples of another. Topography determines the land routes by which the world's commodities may be transported most cheaply and quickly. The engineering sciences have made possible the utilization of all the natural resources provided for man by a bountiful earth, and education places all these at our command.

GEOGRAPHIC FACTORS OF INDUSTRIES AND COMMERCE

Location.—Location is the greatest single factor in the success or failure of communities of men. With all other factors favorable, but with a location that fails to provide for numerical and commercial expansion, that community, whether a village, a city or a nation, is doomed to an inferior existence. Location can be viewed from three standpoints—that of the community itself, that of its immediate neighbors, and that of the world at large.

The first of these concerns the features inside the community. Thus, certain parts of a city are more favored than others. Manufactures locate in one part, the wholesale houses in another, retail stores in another, residence largely in a fourth, while the financial center of the city may be segregated from all the rest. Real estate values have a habit of responding to strange internal influences. Transit facilities follow favorable rather than unfavorable location features. And finally, even the politics of the various parts of a community are subject to this influence.

The second, or neighborhood phase of location, is large and complex. Switzerland and Bolivia are doomed to economic inferiority because surrounded by other political units, with no direct outlet to the sea. Germany and Austria-Hungary felt themselves forced to an armed attempt to break the bonds that almost surrounded them, in part because of their short and unsatisfactory sea-coasts. On the other hand, the Scandinavian countries are all rim, and the accessibility and usefulness of the interior country are slight. Their outlook is constantly outward. Great Britain is the best example of a country at once endowed with a great length of favorable coast-line, and possessing the utmost accessibility of all her interior. Her maritime policy, her expansion of manufacture and trade, the location of her cities, even her politics reflect this influence. The United States, with its vast, accessible interior and its outlook on two oceans, stands supreme in the value of the location factor.

In some cases location takes on the appearance of a chain com-

posed of connected links. Such a case is the succession of island possessions of a country that can be used for fuel stations for ships. And finally, location of a nation's colonies may be chiefly or entirely scattered in an unrelated manner. Such were Germany's African colonies; such are some of the colonies and the dominions of Great Britain.

The point of view of the world at large involves the possibilities for world trade. A nation or a seaport situated in the focus of the world's trade routes has an unlimited apportunity for growth. There are still, in spite of our recent wonderful advances in transportation, "ends of the earth." The opportunities of Cape Town cannot be compared with those of Hamburg or Liverpool; Guayaquil cannot be compared with New York. Inland cities, beyond water navigable for ocean vessels, have not the same present or future strength as seaports of the same country.

Topography.—Topographic control of the various industries and of commerce is clearly marked. Grain crops are planted, cultivated and harvested on a large scale almost wholly by machinery. Farming by hand in rugged lands may be carried on in a small way; the large-scale farming of the world's chief food products, however, must be pursued in level lands where ponderous tractors and other farming machinery can be operated. About nine-tenths of the world's population live on lowland plains, where the soil is more productive and the labor of food-producing is vastly easier.

The topographic control of transportation is apparent. In moving from the producer to the consumer commercial products must go by the easiest rather than by the shortest route. River valleys in rugged lands are almost always routes of commercial traffic; and low passes across mountain ranges have always been highways of world-wide importance. Khaibar Pass is the chief gateway between Europe and India; and the Mohawk Gap in New York practically determines freight costs between the Mississippi Valley and the Atlantic seaboard. The natural routes of traffic are "lines of least resistance," and the world is determining that such routes once established shall be open to all the world on equal terms.

Topographic conditions in many instances control industries. Power is required in manufactures. Therefore the great manu-

facturing centers are located where outcropping rocks have brought coal, iron ore, or other minerals within the reach of humanity. Thus the abrupt slopes and broken rocks of the northeastern part of the United States have given to that region the coal, water power, and hydro-electric power. The coal fields of the central States and the iron ores of the Lake Superior region have made the shores of the Great Lakes one of the world's greatest manufacturing regions.

Plains, then, are the chief home of man, the center of his agricultural activities; and where they border the sea are the most accessible links between the ocean, with its vast network of international trade routes, and the interior, from which most of the raw and refined commodities for such trade must come. Plateaus are as a whole undesirable features, because of the relative difficulty of transit to and from them, and across or through them. Population is usually sparse. The plateau character of much of South Africa, where the highlands come nearly or quite to the sea and there is little plain land on which prosperous settlements can arise, has had much influence upon the slow development of the region. Mountains have their chief use, aside from a few that are valuable as health resorts, in providing a large share of the world's mineral wealth. As barriers to migration and to communication between peoples, they have hindered the development of the continents; but as barriers against encroachment by hostile tribes or nations, they have proved of value. Their climates, where not too harsh, have bred hardiness in their inhabitants; and the struggle for existence, when not too severe, has developed independence and alertness.

Climate.—The activities of mankind are very largely controlled by conditions of temperature and rainfall. The density of population depends mainly on the productivity of foodstuffs and manufactured articles. Deserts are too dry and polar regions are too cold to produce foodstuffs; therefore they are sparsely peopled. The rainfall in such regions as the Amazon Valley is too great for ordinary foodstuffs; the population, therefore, is confined to a few savage tribes.

The grains, grasses, and meat are the world's chief foodstuffs. These thrive mainly in temperate climates. Rice is essentially a crop of the torrid and the warmer parts of the temperate zones.

The growth and production of these foodstuffs make these regions the dwelling place of mankind; and where mankind dwells, there also his activities must be.

The civilization of today is centered in those parts of the world under the influence, during all or part of the year, of the anti-trades or prevailing westerlies; and we have reason to believe that this has been true also in past ages. Moderate variation in temperature, rainfall, wind direction and barometric pressure, appear to be necessary to stimulate man physically and mentally to his best efforts. Economic uplift and control of the tropics must take the form of securing the best possible results without attempting to imitate too closely the methods that are successful in the temperate zones.

Earth Resources.—Geology has determined the location and character of mineral resources, including the most important of all, soil. For the most part, where soil is abundant and of good value, the bedrock is too deeply covered to permit outcrops that might expose other valuable minerals. Thus the latter occur in broken country, such as dissected plateaus and mountains that have not been worn down too deeply. Where erosion has exposed the roots of mountains, there is a scarcity of economic minerals. Rather they occur around, or on the flanks of, old mountain centers and in the newer mountains that so often rim the old.

Vegetable resources, wild and cultivated, depend upon topography and climate for their occurrence; and the animals useful to man depend in their turn upon vegetation, for the domesticated animals are almost exclusively vegetarian in diet.

Any country whose geographic conditions permit the development of only one of these types of resources is inherently weak. Thus the Falkland islands, whose per capita wealth is high, export only sheep, and can hardly be considered a strong community.

RAW MATERIALS AND THEIR INDUSTRIES

The term raw material is used in a very loose way to indicate any substance that must be altered or changed in any way before it passes from the producer to the consumer. Thus iron ore is raw material to the steel smelter, who changes it to ingots and billets. Ingots are raw material to the manufacturer of building steel, or of wire; and wire is raw material to the manufacturer of nails or of woven netting. In the same way green hides are raw material to the tanner, and leather is raw material to the shoemaker. Wheat is the raw material of the miller; and flour of the baker.

Mineral Resources and Industries.—The remarkable development in the uses of iron and steel is a characteristic difference between eastern and western civilization. Iron is one of the most abundant metals of the universe. It occurs in every part of the earth. To be workable, however, the deposits of ore must be of great size and nearly pure; they must be accessible; they must also be within reach of cheap transportation, and within a moderate distance of fuel and limestone. The extent of workable ores is not fully known. The chief fields in the United States are those of the Lake Superior region and the southern Appalachian Mountains.

Hitherto, the ore deposits of Great Britain, Lorraine, Spain, and Sweden have produced the greater part of the iron and steel made in Europe. Not much iron and steel are made outside of the densely peopled regions of Europe and the United States. Most of the steel is used in making rails, bridge and building material, ships and in other structural work. The foreign commerce of iron and steel consists chiefly in the shipment of rails and structural shapes to Africa, South America, China, and other parts of Asia, where railway extension is going on. During the World War practically all the steel was used in the manufacture of war implements.

Copper has become one of the most necessary metals of the

arts. It is used chiefly as a carrier of electricity. Size for size copper wire carries the electric current better than any other metal except silver. Its tensile strength gives it also a great value. Most of the world's copper supply is dervied from the western highland region of the Americas—the United States, Mexico, Peru, and Chile. The mines of the United States produce about half of the world's supply and the export of copper in normal times is one hundred million dollars in value, nearly all of which goes to Europe. Nickel, so largely used to harden and strengthen steel, comes chiefly from one locality, Sudbury, Ontario.

Aluminum, a few years ago worth more than its weight in gold, is now made so inexpensively that it is supplanting other metals used in domestic arts. Most of the metal is produced by electric smelters in localities where electricity is cheap. The output of the United States is smelted mainly at Niagara Falls and Pittsburg. Most of the lead of commerce is obtained from ores occurring in the western highland region of the Americas. The greater part is used in making waterpipe and in the manufacture of white lead for paints. Two groups of mines produce nearly all the world's supply of quicksilver—Almaden, Spain, and New Almaden, California. The mines of Idria, Austria, yield a small proportion of the output. Most of the world's tin is found in the mines of the Straits Settlements, Banca, and Billiton. Zinc is so widely distributed that its commerce is almost wholly domestic. The Galena-Joplin district of Missouri and Kansas, and Franklin Furnace, New Jersey, furnish most of the metal used in the United States.

Gold and silver are used in the manufacture of jewelry, and in coinage. The region of the greatest production of gold shifts from time to time. At present most of the metal comes from the western highlands of the Americas and from Transvaal, Africa. The western highlands produce most of the world's silver. Cobalt, Ontario, is also one of the chief centers. Platinum, the most expensive commercial metal, is obtained mainly in the Ural Mountains. Under the Czar, every impediment possible was placed in the way of either Russians or foreigners who sought to develop the deposits.

Coal, petroleum, and natural gas are used largely in the production of heat, light, and electricity; and coal, converted into coke, is the chief smelting fuel. They all are essentially power

fuels. The United States produces normally about one-third of the world's coal supply; western Europe about one-half. Most of the commerce of coal is domestic. In some instances, as Switzerland, which is without coal, the commerce is necessarily foreign; and at times coal has been shipped from Australia to California. It has been found much more economical to ship ore to the coal than *vice versa;* hence most of the great smelters are in the coal regions. For the same reason, manufacturing plants are usually located in localities where cheap coal can be obtained. A nation's power is measured very largely by its resources in coal.

Petroleum is now an indispensable factor as a power fuel. For many years its only use was the production of kerosene; at the present time kerosene is a by-product. Since the invention of the internal combustion engine, gasoline has became one of the principal petroleum products. Motor-vehicles are dependent upon it, and air-flight up to the present time would have been impossible without it. Some of the important railways and many steamships use crude petroleum for making steam. The aniline dyes, in the manufacture of which the Americans lead, are petroleum products, as are many drugs and perfumes. The foreign commerce of petroleum products, therefore, has become world-wide. Within a few years, asphalt and the heavy residues of oils have become an essential constituent of the vast network of modern highways of Europe and America.

Some mineral resources of great value and widespread use are seldom thought of in the same connection as iron, coal, copper and petroleum. And yet the sales value of their manufactured products may be very great, and they are as necessary in their way as are the others. Such is clay, and such are the limestone and clay that are used in the great Portland cement industry. Various salts, also, are vital to the life of the world, such as common salt, niter or saltpeter, and potash, so much employed in fertilizer. Stone for building, road metal and concrete forms a large item in the output of many countries.

Mining, Smelting, and Refining.—Most of the useful minerals require either reduction or purification in order to fit them for manufacture or use; and all must be won from the earth by some form of mining. For some varieties open pits and quarries are used, but most mining is underground. Much of it requires great

expenditure of money for excavation, machinery and operation, hence some minerals can be successfully won only by the employment of considerable capital. Mines cannot be carried to an indefinite depth, but in a few places mining of metals is today proceeding a mile below the surface.

One thing must be borne in mind in mining, and in planning the business part of exploitation of minerals. A mine is constantly using its capital. Minerals form slowly, and when a deposit is exhausted by mining, another must be sought. This requires the setting aside of an unusually large percentage of the profits, to purchase new properties.

After mining, metals usually require smelting, even when they are found "native" or in the metallic form. This process consumes time and fuel, and increases the expense of production. Many of the recent advances in industry have resulted from quickening or cheapening this operation, or from producing a purer product or suffering a smaller loss of the metal. The smelting of iron and copper ores is one of the very extensive industries. Some metals are smelted in two stages. Thus copper ore is first smelted into a "matte," often in the mining district. This product contains a very high metal content, while the ore is always of low percentage. The heavy, compact matte is then shipped to some important industrial center, such as the New York district, and there "refined" into pure copper.

A very different type of refining prepares oil for the market. The crude petroleum is sometimes sent many hundreds of miles through pipe lines, or is shipped in tank cars or tank steamers. The refineries are often located at great centers, where rail and water transportation and market facilities are good, such as Bayonne, New Jersey. Here the various chemical processes are put into operation that result in the wonderful variety of petroleum products, literally many scores of distinct substances.

Soils.—The greatest and most widespread mineral resource is soil. Its varieties control success or failure in agriculture, and often determine not merely the amount of the crop but its kind. Some soils are exceedingly rich, but tempt the farmer to over-intensiveness of cultivation, perhaps without proper rotation of crop, and soon become lean and exhausted. The States of the Mississippi valley afford examples. Other types, like those left

by the great ice sheets in northern North America, are poorer but far more enduring. Some soils are sandy and open textured. If not too coarse to be fertile, they yield crops earlier in the year than those varieties that have more clay. All soil is made by the decay and disintegration of rock. In some regions the products of these changes are left where they formed; in most, however, they have been carried off by streams, wind, ice, or the sea, and are now in new regions. The plant food from a million square miles of rock surface may be concentrated in the narrow flood-plain of a master stream.

Soils quickly become poor with too intensive or too long continued use of a single crop. Rotation, that is, planting successively several kinds of crop, may restore the richness of the soil; but more often it is necessary to supply lime, potash, phosphorus, and nitrogen by artificial fertilizers. Only rarely can a soil be renewed by nature, as that of the Nile delta by yearly flooding with water and silt.

Irrigation and Agriculture.—In such parts of the world as are too arid for abundant plant growth, but have accessible water, irrigation may be practiced. The soil usually needs only moisture to make it fertile. Where the necessary water is carried from mountain streams and delivered by means of ditches, only a narrow belt along the elge of the desert can be utlized; and of our own western desert areas, not more than five per cent. of the area can be thus reclaimed, despite the great scale of operations conducted by the National Government. Where the structure of the rocks permit, however, artesian wells can be driven, and irrigation by this means is now successful 250 miles away from the place where the rain or stream water first sunk into the earth. Many countries are practicing irrigation, and the crops from soil formerly barren are often remarkable for their size and quality. China and India in the east, and the United States in the west, are examples.

Agriculture and Land.—Extensive agriculture of a generalized type is characteristic of country that has not yet advanced far in its economic development, such as Argentina, Australia, and parts of Russia and the United States. Population is sparse, land values low. As the country advances, land becomes more valuable, plantations and ranches give way to smaller farms, and agricul-

ture becomes both more diversified and more intensive. The yield of crops per acre doubles and trebles. The most intensive and varied farming is that of the truck-gardener in the vicinity of great cities.

Foodstuffs.—The principal foodstuffs of commerce are the grains and meat, including fish, dairy products, sugar, and the beverages, mainly tea and coffee. Of the grains, wheat, rice, and maize or Indian corn have the widest use. Rye is much employed as a breadstuff but its commerce is not so wide as that of the other grains. Oats and barley are consumed chiefly where they are grown, although the use of barley in the manufacture of malt gives it an importance in commerce.

The central States and Canada, with their glacial soils, and the broad valleys of the Pacific coast, are the most important wheat-growing region of the world. Ordinarily this region produces about one-third of the world's crop. The grainfields of eastern Europe produce also about one-third. British India, Argentina, and northern Africa produce most of the remainder. From one-fifth to one-third of the crop is consumed not far from the locality in which it is grown. Most of the commercial, or export crop goes to the densely peopled regions of eastern North America and western Europe. Owing to the fact that wheat is grown in many latitudes in both hemispheres, a great international trade in wheat is possible, for it can be bought somewhere every month in the year.

The world's consumption of wheat is nearly 3,000,000,000 bushels; and this is about the amount of production. The record world crop of 1915 was a little more than 4,127,000,000 bushels.

Rice is consumed probably by a greater number of people than any other grain. The moist tropical lands of eastern and southern Asia produce most of the crop, and the Mediterranean countries of Europe a considerable amount. The Gulf States and California produce a small percentage of the total. The export of rice is small in proportion to the consumption, because of the great number of tropical people requiring it. Asia exports it to western Europe and the United States. Maize, a native of the American continent, is now much cultivated in Europe. The world's production is about 4,000,000,000 bushels, of which the United States produces three-fourths. Less than three per cent.

is exported as grain, but a very large part of the crop is consumed by swine, which, in the form of pork products, move from the corn belt States of the Mississippi Valley to the eastern United States and western Europe.

A considerable part of the world's meat supply is consumed where it is produced, but the plains of South America, Mexico, Asia, Australia, New Zealand, and South Africa furnish a large supply to densely peopled regions. Refrigerator ships and cars enable the shipper to deliver fresh beef and mutton to customers five thousand miles away.

Sugar is used by a greater number of people than any other food staple. In 1815 the per capita consumption in the United States was 8.4 pounds; in 1915 it was 84 pounds. The East and the West Indies produce most of the raw cane sugar; the Baltic Plain and the beet-sugar districts of the United States supply practically all the beet sugar. Raw sugar is shipped to the great seaports of Europe and the United States to be refined. The world has become such a great consumer of sugar that, although the proportion exported is not large, the gross amount is enormous. The Baltic Plain and the East Indies supply Europe. Cuba, Porto Rico, and Louisiana supply most of the eastern part of the United States. The Hawaiian Islands supply the western part, with a surplus to sell elsewhere. Cane sugar is a tropical product; beet sugar is possible only in the temperate zone.

Most of the world's tea crop is grown in British India, China, Japan, Ceylon, and the East Indies. The people of Europe are the chief tea-drinkers, and the greater part of the export crop goes over the Trans-Siberian Railway to consumers. Choice grades of coffee are grown in Java and Sumatra. A very fine peaberry coffee, marketed as "Mocha," is grown in Yemen, Arabia. The world's crop is not far from 3,000,000,000 pounds, two-thirds of which is grown in Brazil. Although still known as "Rio" nearly all is shipped from Santos. Colombia, Venezuela, and Central America produce considerable crops. Porto Rico and Mexico furnish a small amount of very high grade bean. About one-third of the world's product is consumed in the United States, the chief coffee-drinking nation.

In sparsely peopled regions cattle are grown mainly for beef, and hides or wool; in densely peopled regions they are kept chiefly

for dairy products—milk, butter, and cheese. The value of these depends not only upon their food-qualities—they are among the most nutritious foods—but also upon certain principles known as "vitamines" which seem to be absolutely necessary to preserve life. Milk will not stand long-distance shipment; its delivery, therefore, must be both certain and prompt. Butter may be shipped long distances and cheese, properly prepared, will remain in good condition for many months.

Of the various fruits, the banana has the greatest intrinsic value. It is a food as well as a fruit. It is estimated that the wheat consumed by a single adult in a year requires about one-half acre for production; but half an acre of bananas in a favored location will supply the necessary food for a village of one hundred persons. Bananas, about 40,000,000 bunches per year, are shipped from practically every port of central and tropical South America to the United States. The steamship that brings bananas at times also bears oranges, lemons, and grapefruit.

The grape has been an important commercial fruit for more than thirty centuries. Wine grapes are cultivated in nearly every section of the warmer parts of the temperate zones; and wine and raisins are among the widest exports.

The commerce of garden products in densely peopled areas has become a business of world-wide scope. Better methods of transportation now enable the truck farmer to convey produce a distance of more than one thousand miles. The truck gardens of Florida furnish fresh vegetables to New England in February, and South Africa delivers its midsummer crops to London in the heart of the European winter. New York City receives its supply of potatoes from Bermuda, Florida, Long Island, Connecticut, and Maine, each in turn. Similarly, grapes and strawberries are on sale every month in the year.

Each year the world's poultry product is increasing in importance; normally its value is about equal to that of the wheat crop. The shortage of the world's meat supply in part is responsible for the increased demand for poultry products. During the World War eggs were shipped from southern Asia to the United States.

Materials for Clothing and Shelter.—Humanity requires clothing and shelter the world over and, next to the commerce of food-

stuffs, the raw materials of clothing, shelter, and domestic articles form the most important items of commerce. Those used in clothing consist chiefly of wool, cotton, leather, and fur. One or more of them is used by practically every human being and in many instances the manufactured articles travel thousands of miles to reach the consumer.

The world's yearly wool clip is normally a little more than 2,250,000,000 pounds, of which more than three-fourths comes from Australia, South Africa, Argentina, Uruguay, and New Zealand. The United States produces about one-eighth of the clip and consumes one-quarter. The wool clip is not equal to the demand; and if it were doubled the whole amount would be used. In the United States and Europe the yearly consumption of wool has been as high as eight pounds per person. Sheep bred for wool do not furnish the best of mutton, and conversely those bred for flesh have coarse and poor wool.

The world's cotton crop is about 22,000,000 bales of 478 pounds each per year, of which the United States produces from one-half to three-fourths. British India furnishes about 4,000,000 bales, and Egypt 1,250,000 bales. By far the greater part of the cotton is made into cloth in eastern United States and western Europe. A small proportion is made in Japan, China, and India. The commerce of cotton is probably wider than that of any other textile. There is scarcely an individual in the world who does not use cotton cloth. There is no surplus; it is all consumed.

Practically all the fiber flax, of which linen is made, is grown in western Europe. Europe and the United States consume nearly all the linen cloth. Nearly all the linen is made in western Europe—much of it in Belfast. Linen industry in the United States has been a failure, and the flax grown here is used to make linseed oil. Japan, China, Italy, and southern Europe produce about four-fifths of the world's silk.

About 2,000,000,000 pounds of hides are required for the world's leather, and these are produced very largely where they are used. The hides imported into the United States come mainly from the grazing regions of South America and Mexico; those required in western Europe are brought chiefly from Australia, New Zealand and South Africa. In northerly latitudes wind-tight garments are very necessary; and for this the pelts of fur-bearing animals

are used. These have become so scarce that the prices are almost prohibitive. In several instances the slaughter of fur-bearing animals is restricted by law, or wholly forbidden. In the United States the killing of bison, beavers, and fur seals is forbidden. Canada, Alaska, and Siberia are the chief fur-producing regions. A large proportion of fur is employed in making felt—especially that used in hats.

Of the materials used for shelter and domestic articles lumber is commercially the most important. The zone of building lumber most available covers the continents mainly between the 35th and the 55th parallels. The available lumber supply of the greater part of Asia and Europe has been exhausted. The chief sources for the future are Russia, the Scandinavian Peninsula, Siberia, and Canada. In the United States, consumption is double that of growth. Canada alone has an abundance of growing timber. Cabinet woods, especially mahogany, are brought largely from tropical America and Africa. The supply of oak, maple, and birch is not so greatly depleted in the United States as is that of cedar. Nevertheless, the consumption of cabinet woods exceeds the growth.

Among the world's non-mineral products rubber has become the most important. Motor vehicles must ride on rubber treads, and the consumption of these aggregates hundreds of millions a year. For many years the Amazon and Congo forests produced enough wild rubber to meet the world's demands. At the present time the rubber trees are cultivated wherever rainfall permits throughout the tropical world. Para is the chief shipping port of Amazon rubber, and is probably the world's chief crude rubber market.

MANUFACTURING INDUSTRIES

Power Development.—In early days manufactured articles were produced by hand labor or by man-operated machinery. To a great extent this simple stage has long since disappeared, although some articles can be shaped only by hand, and some others are still of better quality when hand-made. But quantity production demands machinery and the multiplication of units. One man now controls processes formerly requiring scores or hundreds of hands. To run this machinery, power must be applied on a large scale. Fuel is still the chief source—coal, oil, gasoline, or in a few regions wood; and the fuel more often than not is used to make steam which in its turn propels the machinery. There is much waste energy in this. The internal combustion engine, burning chiefly gasoline, is in many ways economical, but units of the size successful with steam are not at present possible. In most respects the utilization of water-power, not directly by wheel as formerly but through turbines driving dynamos producing hydro-electric power, is the most satisfactory. It has the advantage, moreover, of being transmissible for long distances; but beyond 250 or 300 miles leakage from the wires is still excessive. Still, one large central plant can supply all the power necessary for industries over a considerable radius. At present no country having large water-power resources uses more than a very small fraction of its available supply; and, merely as a means of conserving coal, a much larger development of such power will become necessary in the near future.

The use of the sun's heat and of power generated through the tides, although theoretically possible, has hitherto proved unpractical; and most inventions to accomplish this are either visionary or fraudulent. Animal power, used slightly in a few primitive regions, is a negligible factor in the world at large.

Varieties of Manufactures.—The United States Census Bureau lists more than 300 types of manufactures, each of which can be subdivided into a number more. Their variety is almost beyond

belief, a single town often manufacturing many hundreds of kinds of objects; and the complexity of engineering and of business organization necessary to furnish us with the articles we use in our daily life is bewildering. The state of a country's economic development can be rated closely upon the basis of the extent and variety of its manufactures for home consumption and export.

Essentials and Luxuries.—Some things we must have, to live or to maintain our status in society, and others we crave but do not really need. These last are luxuries. But we are all different, and the luxuries of one person or nation or age become the necessities of another. Certain types of articles, however, are so widely necessary as to create vast business enterprises. Steel rails, machinery, vehicles for land and water transportation, certain foods or food bases, and various types of clothing are among them. But raincoats, necessary in New York, are superfluous to a dweller in Arizona, and a suit of clothes is of little value to a Hottentot.

Among civilized peoples, the line between necessities and luxuries is drawn partly by ability to purchase, partly by real or fancied need. Advertising has done much to create habits that convert luxuries into apparent necessities, but when one is under compulsion, he is astonished to find how many "necessities" he can do without.

In general, the manufacturing of those things necessary for large numbers of people or communities in advanced countries is done on the largest scale, employs the greatest number of hands, and produces the greatest returns.

Paper, Rubber, Leather and Clothing.—Some manufactures must be made where the raw materials are produced. Paper is often made as near pulp-mills as possible. But, while many manufactures pursued this policy in the early stages, depletion of near-by ingredients has made necessary a change of location; and power or market accessibility becomes more important. Thus we find today very extensive paper works at Holyoke, Massachusetts, where are power and rail accommodations but no wood for pulp. Very little paper is made from rags, and that only the highest grade. The demand for newsprint has caused such rapid deforestation that either we must practice scientific forestry or we must find a substitute for wood-pulp.

Rubber articles are never made where the gum is produced, but as near as possible to market. Hence the huge development of all sorts of rubber manufactures in the United States, especially in proximity to the automobile industry. Leather articles, also, are not made where hides are supplied, but where machinery can be had best and where markets for the varied refined products are good. Special forms, like shoes, long centered in restricted regions like Eastern Massachusetts, where water-power was not necessarily good, but transportation to market was.

Cloth and clothing are usually made in quite different districts. The former demands large-scale power application. The latter is governed by labor more completely than most industries, and thrives best in congested cities. This has made New York City the greatest center for ready-made men's clothing in the United States, and one of the great centers for women's clothing as well.

Machinery, Shipbuilding and Metal Industries.—Shipbuilding must locate where ships can be launched and put at once to use. Hence shipyards are on tidal waters, great lakes, or navigable rivers. Much that goes into the equipment of a ship, however, is included under machinery, and may be made at a distance from the yard. The success of shipbuilding is largely a result of national labor or government aid policies. Of late, before the World War, the United States has been unfortunate in this regard; but with the supremacy established by means of governmental control of construction, it should be possible to lead the world, not only in shipbuilding, but in controlling the trade that should follow our flag. In 1911, Great Britain and Germany surpassed us in their merchant marine. Now we lead the world. The policy of Britain has been to aid the building and maintaining of ships to the utmost, so that previous to the war that country controlled nearly one-half the world's tonnage.

Machinery can be manufactured in a wide variety of locations, chiefly controlled by labor and market. In general it is an advantage to be near good markets, especially in making heavy machinery other than rolling-stock, on account of the heavy transportation costs. Small articles, costing less to transport, can best be made where labor is abundant. The nature or breadth of market demand is also important; for some classes, for instance textile machinery, find their market geographically restricted. One

of the most important factors in promoting machinery manufacturing is the quantity production of interchangeable parts of standard character. This tends not only to increase output but to decrease price.

The chief types of machinery are agricultural, land transportation, and manufacturing; the latter including both power and tool machines. Metal manufactures include many small articles, like workmen's tools and firearms, and not a few of high cost, like jewelers' products. In all these the cost of labor far exceeds that of the raw materials. America is at a disadvantage in this class of industries, because of the high labor cost. To offset this, we have superior inventiveness, abundance of raw materials, and patent control. Where no patent protects the article, as is the case with many toys, the lower wages of European workmen win.

Chemical Industries.—These include a large number of separate industries, whose aggregate value is very great, and whose control until recently was in many cases in German hands. Dyestuffs are an illustration, and other coal tar products, such as many drugs, flavors and perfumes. In five years the United States has wrested from Germany the control of what was, in 1914, 95 per cent. of our dye consumption. This has been accomplished by improvements in chemistry, aided by the absence of shipments from abroad. These dyes are now of satisfactory grade; but whether the industries can compete in price with foreign products later will depend upon our future policy.

The raw materials of these industries are themselves manufactures. Besides coal tar, a by-product of coke manufacture, are especially sulphuric acid, soda ash, sodium nitrate, ammonia, potash. Some of these substances are essential for explosives used in mining, quarrying, tunneling, etc.

In many ways the fertilizers are the most important products of these industries. Niter from Chile may be replaced by products whose nitrogen is taken from the air; potash from Germany will be succeeded by that from Alsace and from our own deposits; and phosphates will continue to be produced from both rock and organic sources, wherever in this country we can get them. The varied forms of the soap industry use chiefly organic chemicals.

The Esthetic Industries.—A large number of industries minister chiefly or entirely to man's esthetic nature. The very

extensive gem cutting and mounting, the work of goldsmiths and silversmiths, artistic work in stone, clay, rugs and carpets, paintings, and many other types, all together involve a large total expenditure of money by the consumers. Some of these industries are international, some wholly or largely domestic.

MARKETING THE WORLD'S GOODS

Principles of Trade.—Trade involves three primary factors—a need of something not now possessed, commodities to exchange, to meet the needs of others, and a means of carrying the commodities to and fro. In addition, as trade has long since outgrown the stage of mere barter, modern commerce requires financial machinery for the payment of debts incurred by both parties engaged in the trade.

The differences, both of needs and of production of goods to supply the needs of others, arise from several causes. The first is difference of race, and of race habit. The orient and the occident will always differ in this respect; but as time goes on, this factor becomes of less importance. The second is difference in resources. The importance of this factor is increasing, because of the increasing interdependence of peoples. These differences may be of topography, of mineral wealth, or of vegetable or animal resources, or favorable soil and climatic conditions making possible the cultivation of such resources. The third is stage of economic development. Argentina represents a stage passed by the United States decades ago. The western plains of this country are at a stage occupied by some of the eastern States in the early years of our national history. The United States as a whole is some distance behind Great Britain. The needs and the goods offered for sale change as a nation or a region progresses from the stage at which it offers raw materials and requires refined articles, gradually to that at which it is a large exporter of manufactures, and is obliged to look abroad for most of its raw materials. It should be kept in mind that the per capita volume of foreign trade is no criterion of stage of development. The type of foreign trade is, however, a true index of stage. The strongest and highest places in the world's civilization are held by the nations whose foreign trade is of the most advanced type.

Location of Industries.—The cruder industries are of necessity

located with the raw materials. But the final refined products may involve many stages, for each of which the articles of the next previous stage are its raw materials. And these gradually approach the great markets, or are located in places increasingly accessible to market; so that the finished product, to be of international importance, must be assembled either at a great market center or within easy and cheap transportation distance of it. This tends to centralize many such industries at seaports and along trunk lines of railway. Only when land for manufacturing sites becomes too expensive in such places do the industries move out again into the open country, but still along good communication lines.

Financial Machinery of Trade.—Production of commodities in large quantity involves the extensive use of capital, hence large business organizations; and the merchandizing of commodities in quantity require equally complicated machinery. To finance the numerous transactions, various banking systems are necessary. Often much buying is done in a great bargain center, with the aid of the telegraph and cable. Foreign trade especially tends to become centralized in the commercial metropolis of the country, where capital in largest amount is located. Many banks and firms have head offices there, and branches in the principal cities of all the countries with which they deal. Today, New York is the bargain center of the world.

Geographical factors largely govern the operation of these financial systems. Crop sales and movement in great quantity sends a flow of money or credit across the country or to foreign lands. Failure or scarcity of cotton or grains, especially after favorable prediction, may seriously derange the great money markets. The credit of a nation in the world's estimation depends upon the volume and nature of its foreign commerce, which, in its turn, depends upon the productiveness of its mines, farms and factories. The possibilities of selling goods abroad may be aided or injured by the extent to which the peculiar nature of the prospective buyers is recognized and catered to. And to finance these transactions, most extensive preparations must be made to meet their banking and credit demands. Anyone who would succeed in foreign trade must know economic geography thoroughly. Foreign exchange and the balance of trade with other nations are

important factors in the prosperity and broad economic strength of each nation.

Geography and Advertising.—Advertising is a prime factor in increasing domestic trade, and to some extent foreign trade as well. It has its technique and its psychology, and it has come gradually to the extensive use of geography. The intelligent advertising manager or company now studies with care the geographic conditions of the various parts of the field to be covered, and varies his methods of advertising to meet the needs, real, fancied or potential, of these various parts.

TRANSPORTATION AND COMMUNICATION

For the development of modern commerce, proper transportation systems are fundamental. These must insure safety to the goods in transit, permit reasonable dispatch, and provide through routing of the goods to their final destination. For the exchange of information regarding transactions, state of market, and many other matters, communication methods must be available permitting quick, or even instantaneous sending and receipt of messages.

Highways.—Before the development of railways, highways, rude though they were, constituted the only lines of land communication. The main highways had usually a military importance, both in European countries and in our own Thirteen Colonies. But for a long time the development of improvements in roads and streets has not kept pace with other advances, urban and rural. France has led the way in road-building, and today the United States is engaged in an extensive construction campaign. The development of the automobile, not merely for pleasure and for casual trucking but especially for express service, has created a demand for both extension and improvement of high-grade roads. To relieve rail congestion we are going back once more to the use of highways to an extent undreamed in early days.

An equally critical problem is that of the quality of city streets. Millions of dollars are lost yearly because of delay in delivery, due to faulty pavements, and millions more are spent in patchwork repairing of streets improperly covered. Increase in volume of traffic, and in the weight of the individual load and vehicle, demands new types of pavement. Trailers, especially, with their iron tires and heavy loads, have proved too great a burden. A highway is no better than its foundation, and most of the inability of various classes of highways to bear up under increase of traffic arises from improper foundation work.

Automobiles.—The application of the internal combustion engine, using as fuel chiefly gasoline, has completely revolu-

tionized highway traffic. Steam and electricity are used as motive power to a slight extent. Developing rapidly from crude beginnings only a few years ago, automobiles have reached a high degree of perfection, and a large carrying capacity. Motor trucks carrying from one to five or more tons are in use extensively in all civilized countries, for direct delivery of goods, in tramp service, and lately in the United States for service along express routes between cities.

So rapidly are some of the newer countries developing, that motor roads are built in advance of railroads. One of them in Madagascar extends from the Indian Ocean to the capital, Tananarivo, about 150 miles in the interior, and automobiles are daily carrying freight and passengers. Automobile freight roads for long-distance trucking have been built in various parts of South America and Africa. Vast extension of the usefulness of automobiles is the next great step in advance, in solving the problem of land transportation.

Canals and Rivers.—The greatest of modern devices for shortening trade routes, and thus reducing the price of commodities by cheapening transportation, is the ship canal. By the construction of ship canals, the length of many ocean routes is reduced by thousands of miles. Some of these enterprises, like the Suez canal, are the property of private companies, and were developed to make money by canal tolls. The United States government, however, assumed the responsibility, too great for private enterprise, of constructing a great lock canal across the Isthmus of Panama, 50 miles in length. By treaty the United States was given sovereign authority over a strip extending for five miles on either side of the canal, called the Canal Zone. This authority does not extend to Panama and Colon, except that if the Panaman government is unable to maintain order, we shall do so. Despite a complete monopoly over canal and rail transportation across the isthmus, the United States government is managing the project in the interests of the entire world, and not for profit.

By shortening the sailing routes between the Atlantic ports of Europe and the Americas, and the Pacific ports of the Americas and parts of the orient, the canal has reorganized the trade routes of the great oceans. The route around Cape Horn and through the dreaded Magellan Straits is almost a memory.

The voyage from New York to San Francisco, once more than 13,000 miles, is shortened by 7,873 miles, with a saving of time of 32 days for a low-powered steamer and 20 days for a full-powered one. To Guayaquil, South America, the saving from New York, New Orleans and Liverpool is, respectively, 7,500, 8,500, and 5,000 miles.

The changes made by the Panama canal in the routes to east Asia are equally great. The shortest route to the ports of Japan and north China from the Atlantic ports of North America is now by way of Panama. On the other hand, the shortest route to India, Burma and other points to the west of Singapore continues to be through the Suez canal. The Asiatic trade-divide between the Panama and Suez routes for the Atlantic ports of North America will nearly coincide with a line joining Manila and Hongkong. From New York to Manila one saves 41 miles, and to Hongkong loses 18 miles, by the Panama route. The Suez canal shortened the route between British ports and India by about 5,000 miles. The Kiel ship canal across Jutland enables vessels passing between the North and the Baltic seas to gain two days in time. The Corinth canal across Greece effects about the same saving of time. The Cape Cod canal saves the voyage around Cape Cod peninsula. In inland lake transportation, the Sault St. Marie canal in Canada, popularly called the "Soo," is the busiest canal in the world.

Domestic, and sometimes international, canal systems in the interior of continents are in some countries a great factor in reducing the cost of bulk freight. Topography and national policy determine their success or failure. Thus the relatively flat areas of northern France, Belgium, Holland and the German plain abound in canals, with long locks. Between the upper Rhine and the Rhone river system a canal passes underground at Belfort, uniting North Sea and Mediterranean commerce. England has been less successful with inland canals, largely because of rougher topography. The United States has so far failed in canal development, chiefly because no means exists to insure proper division of freight between canals and competing railways. And yet, the ton-mile cost of water freight in the United States is only one-tenth that of rail freight.

Navigation by rivers is very extensive in some countries, and

might be made far more extensive in others. The United States has a length of 26,400 miles on 295 rivers navigable within the meaning of navigation laws, and could extend this greatly. Only 5,800 miles can carry vessels of 6-foot draft, and only 2,600 miles support vessels of 10-foot draft. Railway traffic has grown at the expense of inland waterways in this country; but recent rail congestion emphasizes the need for great improvement and extension of the latter.

Lake navigation on a large scale is confined to the Great Lakes, the annual tonnage on which is enormous. This includes not only a great volume of domestic commerce but of foreign trade as well, especially touching at such ports as Buffalo and Rochester, New York. One difficulty encountered in river, lake and canal traffic in the northern States arises from the winter ice-blockade. The very extensive commerce on the St. Lawrence River is diverted for five months every year, to rail transportation.

Railways.—In the United States railways are less than a century old, but the total mileage today is greater than the distance from the earth to the moon, and contains more trackage than the whole world possessed in 1860. The length of roadbed is 250,000 miles—greater than that of all Europe and about one-third of the world's total. Railroads supply most civilized lands with rapid and comparatively cheap transportation.

The most important railroads are those extending across the continents. They form links of transportation lines girdling the earth; the time required to travel around the earth has been greatly reduced in recent years.

In 1918, more than 60,000 locomotives, nearly 2,500,000 freight cars, and 60,000 passenger coaches were required for the service of the country. About 1,000,000,000 passengers and 2,500,000,000 tons of freight were carried. At the entrance of the United States into the World War, the government took over and operated all steam roads. In little more than one year 5,000,000 troops were carried on the railroads.

The location and distribution of railways depends largely upon topography. Thus the pattern of the roads in the Appalachian Mountain region is very different from that on the Mississippi lowland. Engineers can construct roads almost anywhere, as witness some of the wonderful roads in our own western mountain

regions; but roads must pay, unless, as in some kingdoms, they have been built for imperialistic and strategic reasons. The location of railways depends also, therefore, upon freight, actual, in sight, or potential. In this regard two distinct policies of expansion have been followed. Some road systems are developed chiefly or solely for the benefit of terminal freight; others develop wayside freight, often turning aside from a direct line to secure or to promote it. Of the two, the second is strong, empire-building; the first is provincial, selfish.

Navigation of the Air.—In 1766 Henry Cavendish of England discovered hydrogen. This gas is so much lighter than air, that bags filled with it rise far above the earth and float in the atmosphere. Up to the time of the World War balloons were used chiefly for meteorological research into the conditions of the middle air. During the war captive balloons rendered indispensible service for observation. The invention of the dirigible airship driven by powerful engines has made the navigation of the air by lighter-than-air machines a certainty for commercial purposes. The discovery by Frederick G. Cottrell of a practical method of separating helium, a gas nearly as buoyant as hydrogen, from certain natural gases, has made dirigible airships safe from explosion. Helium gas is chemically inert and, therefore, non-inflammable. It occurs in the gas wells in several parts of Texas.

The successful operation of the aeroplane, made practical by the work of the Wright brothers after many years of experiment, was followed by rapid and extensive development of heavier-than-air flying machines in various parts of the world. The aeroplane proved to be one of the most important factors in military strategy during the World War. Airplanes have exceeded a speed of 150 miles an hour; they have also flown at a height of more than a mile carrying more than two tons of dead weight. Airplane mail service between New York and Washington was established in 1918; and short-distance service was established in many parts of the United States and Europe in 1919.

Both airship and airplane flights have long since passed the experimental stage. For a time the necessities of military and naval service absorbed men, materials and inventiveness; but now airships and airplanes bid fair to develop far greater usefulness

in the arts of peace. Most of the great nations are coöperating in the preparation of middle-air surveys and the publication of the air charts required for international and inter-oceanic air-navigation. Air surveys for mail routes and for national commercial routes in the United States are rapidly approaching completion.

The summer of 1919 will be forever memorable. In May, the American naval seaplane NC-4, under Lieutenant Commander Read, gained for the United States the honor of the first aerial passage of the Atlantic Ocean; making the trip from New York with stops at Halifax, Nova Scotia, southern Newfoundland, the Azores and Portugal. In June a British military biplane made the first non-stop flight across from southern Newfoundland to Ireland, carrying only two men—Captain Alcock and Lieutenant Brown. In July the great British dirigible balloon, R-34, Major Scott commanding, flew from Scotland to New York without stop, in a few days returning; thus completing the first round-trip passage of the ocean.

Meanwhile the important matter of international agreement regarding the use of aircraft has been studied by the aeronautical commission of the Peace Conference, and has prepared a complete report covering the following subjects:—

Nationality and registration of air craft; general principles governing the right of international flight; certificates of air worthiness and competency; principles governing flight over foreign territory; rules to be observed on departure or landing and when under way; prohibition of the carriage of certain objects; the International Commission for air navigation; the marking of aircraft; certificates of air worthiness; log books; rules as to lights and signals, and rules of the air; certificates of competency, including medical requirements; international maps and ground marks; meteorological information; customs.

Urban and Interurban Transportation.—The recent rapid growth of cities in area and population has caused a revolution of the means of transportation. The horse-drawn omnibus and the horse car are inadequate to the present demands of business. The application of electricity—overhead, underground and third-rail systems—has done away with other forms of traction. In 1918 there were not far from 50,000 miles of railway operated by

electricity in the United States, and many steam roads were operating their suburban trains by electricity.

Surface street-cars are limited in speed, and rapid transit is impossible in crowded thoroughfares. Two hours are required by the ordinary surface lines of New York to reach some parts of the city boundary from the great business district at the south end of Manhattan Island. Business men cannot afford this loss of time; hence systems of elevated and underground roads, with electricity for motive power, are now in operation in New York, Boston and Philadelphia. In Chicago an extensive system of elevated roads covers the greater part of the city, and a subway system is under construction. The Interborough system of New York extends to every part of the Bronx, Manhattan and Brooklyn, crossing East River and Harlem River by tunnels. The Pennsylvania tunnels and the Hudson Tubes connect New York City with Long Island and the various railway stations in Jersey City. Electric railroads, called "interurban lines," extend from the larger cities through many towns, with stations in the farming districts. The cars run at high speed, often on private right-of-way, and some of the trains are provided with sleeping cars for the long-distance routes. Ohio, Michigan, Indiana and Illinois have the most extensive and efficient high-speed interurban railroads in the country. Interurban service has been introduced extensively into parts of New England, New York and Pennsylvania. The trolley freight car is also coming into use, to the advantage of the farmers, whose means of reaching markets are thus greatly increased. As the cost of operation is small, these roads compete successfully with the steam lines, usually at a lower rate for freight and fares.

Within and between towns and cities there has arisen a system of "jitney" automobile lines, swifter and more flexible in service than trolleys. The cars range from small passenger machines to large omnibuses.

COMMUNICATION OF INTELLIGENCE

Mail Systems.—International mail service now covers the world, and a letter may be sent to any country in the Postal Union for not more than five cents—to most countries for three cents.

The fastest ships are the mail steamships, and the fastest trains are the mail trains. Air mail routes between great centers have cut the time of letter delivery to about one-half that of the fastest mail trains.

The Telegraph and Cable.—The electric telegraph came into use in 1846, about twenty years after the introduction of steam railroads. Practically, every city, town, and village of Europe and North America has its telegraph office, and telegraph wires extend over every country in the world.

Ocean cables connect the various continents. About a score of cables have been laid between America and Europe. Pacific lines extend between the various ports and the Pacific possessions of the United States.

The Telephone.—The telephone is one of the most important means of direct communication between individuals. Long-distance service is used to a large extent between many people in various cities for the transaction of important business, conversations being held between cities thousands of miles apart, instantly transacting business, when the old methods of letters or traveling would require either much more time or long trips and great expense.

Millions of telephones are in use in the United States in local service in cities and towns and in the open country. They are not only connected with the local subscribers of the particular exchange, but with many other exchanges; and any subscriber may be placed in communication with another subscriber within a radius of several hundred miles.

The telephone service has become so much a part of every-day life that it would be impossible for ordinary business to be conducted without it; and to be deprived of the use of the telephone for a single day would entirely disorganize the routine of business and social relations. Small settlements and plantations in distant islands, widely separated mining districts of Alaska and other isolated countries, stock farms and ranches in the unsettled parts of Africa and South America, are now connected by telephone lines. They are used constantly by armies in the field, to keep in communication and advised of different movements. They are also used to report observations in connection with balloons and airplanes at high altitudes. The general service of the telephone

to humanity makes it one of the most convenient and useful of all recent scientific developments.

Wireless Telegraph and Telephone.—Radio-telegraphy, or wireless telegraph, and telephony have proved of the greatest value in communicating between ships at sea and land stations. An "SOS" or distress signal from a steamship in peril at once brings fast scout vessels to the rescue. Several hundred radio-stations, most of them equipped with transmitters that will send messages one thousand miles or more, are scattered along the coasts of the continents. The great radio-station at Arlington, near Washington, communicates with stations in Europe. It signals weather warnings and time to every part of the United States. It also warns vessels at sea of weather conditions. The globe is completely engirdled with wireless communication, more completely even than by telegraph and cable lines.

Wireless telephony is the latest means of communication. Its greatest advantage is perhaps that a voice from a central station may be heard in half a million receivers anywhere within a radius determined by the power of the stations.

THE WORLD'S OCEAN HIGHWAY

Development of Ocean Transportation.—In the history of the far east, lack of transportation has brought death by starvation to millions of people. Time and again famine has ravaged one part of the continent, when food was a-plenty in another. Egypt, China and India have many times felt the plague of hunger, when only the means of transportation was needed to carry food to a dying people.

Only four hundred years ago deep-sea sailing was practically unknown. It was not until the voyages of Columbus and de Fama, that sailing masters dared venture a hundred leagues from land. Then, for four centuries sailing vessels commanded the seas. The Savannah, the first steamship to cross the Atlantic, carried a pamphlet that had been written to prove that a steamship could not possibly accomplish such a trip. That was in 1819. In the Nineteenth Century the Atlantic was six weeks wide; in the Twentieth Century it was six days wide.

Ocean transportation has become not only fast but cheap. When

iron and steel were substituted for wood in shipbuilding, it became possible to increase the size of steamships; at the same time the cost of forcing them through the water was lessened by the invention of better furnaces, boilers and engines. Between 1870 and 1900 these improvements lowered the cost of steam power about 40 per cent. Nearly four times as much steam power is now derived from a pound of coal as in 1860. With greater carrying capacity and much less expenditure per ton for propelling steamships, their owners were able to reduce freight rates, and could compete successfully with sailing vessels. Commodities that once were luxuries are now found in nearly every home. They are distributed so cheaply by present methods of transportation, that all can afford them.

Most commodities carried from one nation to another go by sea routes. Water transportation is cheaper than land transport. Lakes, rivers and canals are important trade routes in all countries, although they have lost some of their value through the quicker delivery of high-grade and perishable goods by rail. The leading nations spend large sums in the improvement of their waterways.

Long ocean routes afford the cheapest freight rates. Freight charges are higher on large lakes than on the ocean, because lake vessels are smaller and navigation is restricted by small connecting rivers and canals.

"Freedom of the Seas."—In times of peace it has been axiomatic that, outside the three-mile limit, the sea is free. Technically this is true in war for non-contraband goods, but the principle was repeatedly violated by Germany during the World War. One of the purposes of the League of Nations will be to insure perpetual freedom for marine traffic.

The ocean carrier can choose its own route, subject only to weather and water conditions. It is not bound by highways, rivers, or rail lines. Yet the experience of mariners has resulted in the establishment of fairly definite lanes or paths between ports.

The ocean carrier is free also to choose its terminal. Unless under specific contract and orders, the vessel is at liberty to make that port best suited to its purpose, by reason of better markets or better terminals. This stirs competition among cities in the building of terminal facilities; and occasionally a shipping com-

pany threatens to change its ports of call or its terminals, because it has outgrown present facilities and the port offers no better, or because the port has fallen somewhat into disrepair.

Sailing Vessels.—The rapid development of power vessels gradually drove the old-time sailing ship from the sea. "Packet" lines were given up or converted to steam lines. A rapidly diminishing number of tramp ships sailed the seas, and by 1914 they had become almost extinct. The sudden demand for bottoms, due to increased shipping requirements and loss of large power vessels by submarine attack, momentarily revived the value of sailing ships, and many were extricated from the mud-flats to which they had been banished. But this revival is only temporary, and in a few years, so great is the demand for speed in transacting modern business, they will again have disappeared.

Wooden, Steel and Concrete Power Ships.—Similarly the wooden power ship became once more popular during the War. But the time is past when, for other than small tonnage, wooden vessels can compete with those of steel. The latter can be built far larger; they are stauncher; their relatively fire-proof character is reflected in insurance rates for hull and cargo; and their yearly deterioration is less. Steel ships can be built in quantity, moreover, their parts standardized like those of automobiles; and thus tonnage can be added quickly.

Concrete has very recently been applied to ship construction, apparently with success. Reinforced with steel web, rods and beams, it gives the slight flexibility required of every ship that it may respond to the stresses set up in rough water. It has the advantage of rapidity of construction, of lighter weight, and of lower cost. Whether concrete will last as well as steel, or whether deterioration of such ships will be rapid, it is too soon to state.

Submersible Ships.—The idea of submarine navigation is 300 years old, but in a modern sense dates from about 1885, when Holland's plans were first made public. Such boats, however, were extremely primitive and not thoroughly practical.

In 1897, Simon Lake, a naval architect of the United States, built and successfully controlled his first submarine boat; and claims to priority have been made by him and by Holland. The idea was used by various navies, but the submarine was not very generally employed until the World War of 1914. It did not prove

effective as a battleship, but its use by the Germans in destroying unarmed passenger ships made such boats the horror of the world. A world-wide sentiment has protested against their further use.

It is evident that the limit has not been reached in the size and power of these vessels, nor in their cruising radius. But their naval use in war is distinctly forbidden by the League of Nations; and, except as blockade runners in war, they have no value as cargo-carriers.

Sources of Ships' Power.—For most of the vessels of the world, especially in the merchant marine, coal is still used for fuel and steam for power. The vast yearly consumption of coal by the more advanced nations has induced some fear of a too rapid exhaustion of this commodity. Moreover, coal is wasteful of space, and part of it is lost in loading and in firing. Crude oil, so much used in naval vessels and frequently in freight and passenger steamers, is more economical in many ways; but we are even more uncertain of the duration of our petroleum supply than of our coal. Hence many attempts have been made to adapt the internal combustion engine to the large units required in a modern ship, and some of them are now using refined oils, especially gasoline, burned directly in the engine. The increase in efficiency by this means is very great.

TRADE ROUTES

Great Circle Sailing.—While the seas are free, and pathless, vessels not too dependent upon wind and current attempt to go direct from starting point to destination. On the open sea this is done by great circle sailing, as explained earlier (page —). Deviations from this are made necessary by projecting land, icebergs, fog banks, current variation, casual storms and seasonal conditions involving storms. Distances between ports are calculated on great circle arcs, or combinations of two or more such arcs; and the expected time of passage is an average for the conditions met in the various parts of this course.

Full- and Low-powered Steamship Lanes.—Low-powered vessels are assumed to have an average speed of ten knots; full-powered ones of sixteen knots. Thus, on the same route, the former requires 67 per cent. more time to complete the run; or the latter affects a saving of 37.5 per cent. in time over the former. But, as the low-powered vessels are more influenced by currents than the others, they frequently are obliged to take a slightly different and longer route, thus increasing the discrepancy in time between the two types of ships. This may be highly important when time is a consideration; but under many circumstances the slower vessel, far more economical in fuel consumption, can offer freight rates that compete successfully with those of the swifter ships.

The Tramp.—Charter traffic, carried in vessels that have no regular route or destination, is the cheapest form of ocean freighting. The overhead costs are inconsiderable, as such ships are controlled largely by agencies, like Lloyd's in Great Britain. The proper routing, so as to keep vessels going, loaded and not empty, and to take due advantage of market demands for commodities, is a complicated business. Often the rates obtainable for tramp shipping are very low, on the principle that a rate involving some loss is better than idleness.

The Liner.—The liner is the aristocrat of the ocean, even though it may be only a freighter. It has a home. Periodically it

and the others of the fleet sail their course between two ports, perhaps with stops at ports of call. Competition between such ships confines itself to rival corporations and ports. More limited in activity, less flexible in operation, the liner is more certain and is usually swifter. It takes on the whole higher classes of bulk and package freight. For this a higher tariff can be charged. Between the liner and the tramp, the relation is much the same as between the rail and water carriers on the continents. The slower carrier takes the heavy commodities, like raw materials and foodstuffs, and the swifter carrier, with its greater operating costs, takes those articles that will stand a higher tariff.

Oceanic Trade Routes.—Every ocean has its routes—the chief ones are shown on the Flat-Globe—and it will be seen that large spaces on the map lie far from ordinary steamer tracks. The islands that may be situated in such areas generally depend upon an occasional tramp for their contact with the outside world. But here and there are islands conspicuous for the radiation toward them of steamer lines from various directions. Vessels may go considerably off their natural great-circle route to touch their shores. Such islands either offer irresistible bargains in much needed products, or they attract because of the fuel or protection they offer, or they may be exchange stations or freight clearing houses.

Continental Trade Routes.—On a flat plain, rail routes can be direct and straight between terminals. But even such lines are almost certain to deviate slightly from their true course, to pick up the traffic that can be had within the breadth of a natural belt of influence. When to these factors is added that of topography, the distribution of rail lines becomes very irregular. Terminals are perhaps the most important features of a railway system, especially when they are seaports; but terminals of minor importance will suffice, when it would be too costly to push farther. Thus we find the railways becoming less abundant where the Mississippi lowland ends and the vast, semi-arid high plains begin, and by the time the front of the Rocky Mountains is reached few roads are left to complete the transcontinental passage. Deserts are as great deterrents to passage as mountain systems, and the scarcity of railways in central Asia results from this.

Development of Terminal Cities.—Cities at the termini of natu-

ral trade routes have an advantage over all others, in possibility of growth and permanence. In large measure, the end of one freight route is but the beginning of another, and thus the city takes a profit from both sets of transportation operations. In the long run, no other cities have so great opportunities for growth; but, on the other hand, terminals are chosen in large part because they possess inherent possibilities of enlargement.

Development of Line Traffic.—The commercial products of the world move in definite channels. A great center like the United States, or Great Britain, or Japan gathers its raw materials from almost every part of the world. They reach their destination along definite lines of travel—that is, along established trade-routes. When the raw materials have been manufactured into commodities they seek their respective markets in different parts of the world, again traveling along definite trade-routes. Steamships, railways, canals, and airship routes—many are shown on the Flat-Globe—are the carriers of this great interchange; postal service, the telegraph, and the telephone are its chief aids.

It is line traffic, after all, that stabilizes the commerce of countries. Haphazard transportation would never raise either cities or countries to a high commercial level. Not only must the routes be fixed, but it must be possible to route directly to any point by combining the necessary parts of two or more routes.

Types of Cities.—In general, cities may be of either of two types, or may show the characteristics of both. Some cities are entirely industrial, a few entirely commercial, but the majority have both commerce and industry in considerable measure. Even then, one activity is usually subordinate to the other. Pittsburg, Pennsylvania, or Fall River, Massachusetts, are typical industrial cities, in which commerce by itself plays a small part. Hamburg is as near a purely commercial city as any of large size. New York is a remarkable example of combined commercial and industrial activity, for it is the greatest city in the United States in both respects.

Seaports.—Upon seaports focuses the commerce from within and from without. The Flat-Globe brings out this point distinctly. All ocean traffic has its terminals in ports; much domestic land traffic reaches ports, and all the products for export. Imports must be carried inland by rail or water from ports. It is natural, therefore, to find rail lines converging on these ports, as well as ocean routes. It is natural also for ports, having a double and treble commercial stimulus, to grow more rapidly than inland cities.

Cities that are Brokers.—Not only do ports do a large brokerage, or middleman's business in handling ordinary exports and imports, but they attend to the distribution of foreign goods to other foreign countries. In the past, much of the merchandise from New York, destined for certain South American ports, has gone via Liverpool. This type of city is called an "entrepot." Much of the strength of many of the world's greatest seaports arises from the volume of such business.

Transportation and Inland Cities.—While ordinarily, no inland city can become so large as a first-class port, some are inherently doomed to small size or mediocrity; and some, although able to gain a large population, do not fulfill their early promise by continuous and steady growth. Transportation has much to do with

this. Traffic may change the routes, as when the water-borne freight of the Mississippi was largely diverted to the shorter, quicker rail routes, and some cities along that river so far lost their prosperity that their population has remained nearly stationary ever since.

The United States and World Commerce.—The vast and varied wealth of the United States enables it not only to supply a larger share of its own needs than can other advanced nations, but to ship our surplus in great quantities to less fortunate countries. Before the World War, we were producing the following percentages of the world's yield of some of the most important commodities:—copper 56, refined copper 80, iron and steel 40, gold 21, silver 52, aluminum 52, zinc 50, lead 33, oil 66, coal 41, cotton 60, corn 75, tobacco 40, cattle 15, swine 45, fish 12, automobiles 80. These percentages have been increased by war conditions, until now we are almost in the position of being able to feed, clothe and house the civilized world.

THE PANAMA ISTHMIAN CANAL

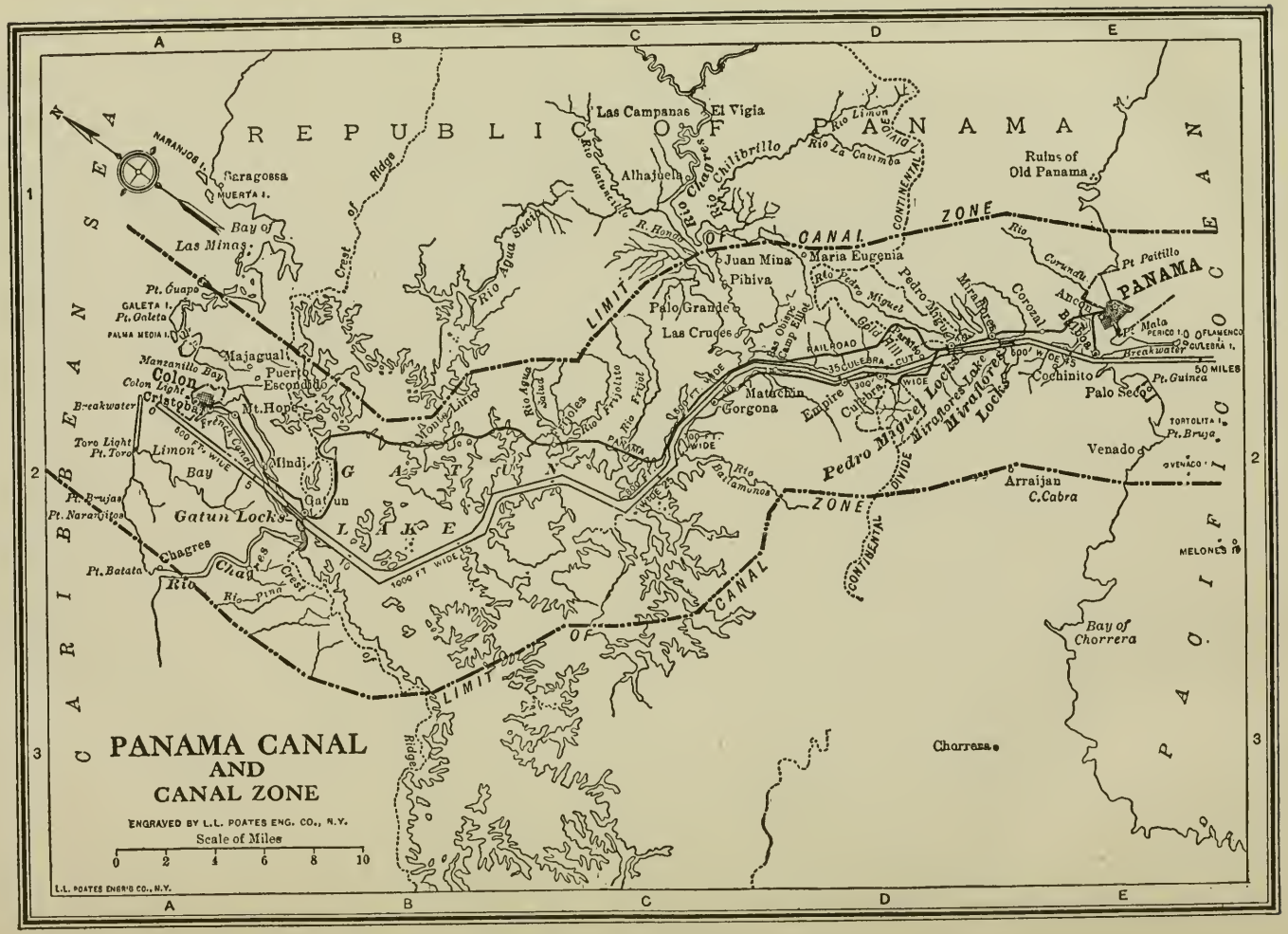
The official seal of the Isthmian Canal Commission bears the motto: "The Land Divided. The World United." That is a terse and accurate statement of what the Panama Canal accomplishes. It divides a hemisphere, and, by opening a new and shorter ocean highway, brings the nations of the earth into closer intercourse with one another. In supplying this highway the United States has conferred a benefit upon mankind which has few equals in human history, the full measure of which time alone can reveal.

Great wars change the map of the world by their victories, but few have made more radical and far reaching changes than will follow this momentous victory of peace—a victory for human welfare and progress.

The Vision of Columbus.—The Canal realizes the dream of Columbus in supplying by the hand of man that "hidden strait" which he sought so eagerly in the firm belief that it had been created by the Almighty as the pathway of the seas to the Indies. If he were living today and could visit the Atlantic entrance to the Canal he would find it placed in an inlet of the same shore which he scanned so closely nearly four centuries ago as he sailed along it in his search for the "hidden strait."

Mule Trail Transit.—In 1519, the first line of posts with a connecting trail was opened across the Isthmus from the Atlantic to the Pacific. Transit by rudely paved trails and small craft over the lower portion of the Chagres River continued to be the sole method of crossing the Isthmus for nearly two and three-quarter centuries.

An irresistible demand for better facilities arose in 1848 when the discovery of gold in California sent thousands of eager fortune seekers across the Isthmus for that state. Unwilling to submit to the delay of the long journey around Cape Horn, they took the short cut of the Isthmus, carried to it by packet and steamship



PANAMA CANAL AND CANAL ZONE

lines which were opened between New York and the termini of the Isthmus trails on the Caribbean.

The hardships which they endured aroused public attention in the United States to both the necessity and the commercial value of a more satisfactory method of transit.

The Panama Railroad.—In December, 1848, three energetic Americans, under the name of the Panama Railroad Company, obtained from New Granada of which Panama was then a part, a grant for the construction of a railway across the Isthmus. In the following year the New York Legislature passed an act incorporating the company. Construction of the road began in 1850 and it was completed in 1855. There is not in the annals of railway construction anywhere record of greater persistence and more indomitable courage than the builders of this railway showed. They were the pioneers of the canal, and the hardships which they endured were far beyond any that the canal builders had to face. The road which they built pointed the way for the canal of the future and became the chief agency in its construction.

The cost of the railway in money was about $8,000,000. The cost in life has been grossly exaggerated. A deathless "fake," which has been published seriously many times, says it "cost a life for every tie." That was a taking sound and is easily remembered and though often denied has a fair chance of immortality. Its absurdity is shown by the fact that there were about 150,000 ties in the railway, whereas the total force employed in its construction did not exceed 6,000. Col. Totten placed the death roll at 835, including 295 white laborers; 140 black; and 400 Chinese.

The Clayton-Bulwer Treaty.—At the same time that the three American pioneers were beginning the construction of the Panama Railroad, there was in contemplation the building of a canal. In 1850 the United States and Great Britain formed what is known as the Clayton-Bulwer treaty, in which they agreed to favor the construction of an Isthmian canal under their joint protection. The object of this was to hasten the building of a canal, but the joint protection provision was so unpopular in the United States that it made impossible any such construction for 50 years.

The French Failure.—In the meantime, Count Ferdinand de Lesseps, the builder of the Suez Canal, conceived the idea of repeating his success at Panama. He formed a company for that

purpose in 1879 and began work in the following year. He proposed to build a canal at sea-level and to accomplish the task in 12 years, at an estimated cost of about $132,000,000. Eight years were spent in the effort, and about $260,000,000 were expended. During that time about one-third of the proposed canal had been excavated. A change of plan was made to a lock canal during the final year, but only a small amount of work was done upon it. The failure of the French company in 1889 was complete. It had received from all sources $266,000,000, and every cent of it had been spent. It was placed in the hands of a receiver, and an official examination of its affairs revealed a vast amount of extravagance and bad management.

Work of the French.—It is the undivided opinion of the engineers of the American canal that the French engineers are entitled to high praise for their excellent work, and for the courage and devotion shown in prosecuting it. They had to encounter obstacles which their successors were not called upon to meet. The mosquito theory of disease transmission had not then been invented. They did not know that both malaria and yellow fever were transmitted in that way and in that way alone, and could not adopt effective measures of prevention. The consequence was that their death roll, from yellow fever especially, was very heavy, and dread of that mysterious disease was constant and demoralizing. During the eight years of work about 2,000 Frenchmen died of yellow fever, and the total deaths from all causes among all employees is estimated by the best authorities at about 16,500.

American Plans.—Following the French failure, events which were to clear the way for the American canal occurred with gratifying rapidity. A new treaty with England, known as the Hay-Pauncefote treaty, was adopted which gave the United States the right to construct what the American people desired—an American canal, built by Americans and controlled by Americans.

A Commission appointed by President McKinley in 1899 had made a report in favor of constructing an Isthmian canal at Nicaragua in preference to Panama, because the new French Canal Company, organized on the ruins of the old, asked $109,000,000 for its rights, property and franchise on the Isthmus, which the Commission had valued at $40,000,000. Before action could be taken by Congress, the French Company consented to sell for

$40,000,000, and the Commission reversed its finding and recommended a canal at Panama. In June, 1902, a bill was passed by both houses of Congress and signed by President Roosevelt adopting Panama as the route.

That the United States made a good bargain in this purchase has been established beyond dispute. A careful appraisal was made and officially adopted by the Canal Commission which has built the canal, soon after the work was well under way, of the value of the work done and property of all kinds received from the French in return for the payment, and the total was fixed at $42,799,826. Of this amount about $25,000,000 was for that part of the French excavation—39,000,000 cubic yards out of a total of 78,000,000—which had proved useful to the American Canal.

Colombia Loses Panama.—Before work could begin at Panama a treaty had to be made by the United States with Colombia. One was negotiated, was signed by representatives of both countries, was ratified by the Senate of the United States, but was rejected unanimously by the Congress of Colombia, on the ground that the price stipulated to be paid to Colombia, $10,000,000 in gold and, in addition, beginning nine years after the date of ratification, an annual payment of $250,000, was insufficient.

The authorized represetative of the Colombian government had informed the American government through its minister at Bogota that the treaty could not be ratified without two amendments, one stipulating that the French Canal Company should pay to Colombia $10,000,000 for the right of transfer of its Isthmus property to the United States and the other increasing the payment of the United States to Colombia from $10,000,000 to $15,000,000. Secretary Hay, for the United States government, refused to entertain these proposals.

The representatives of the department or province of Panama in the Colombian Congress gave public notice while the treaty was under consideration that Panama would revolt if it were rejected. It was rejected on August 12, 1903, and on November 3 a revolution took place in Panama and an independent Republic was established. The United States government promptly recognized the new republic, negotiated a treaty with it for the construction of a canal, and in May, 1904, formally took over its acquired property and began work.

Yellow Fever and Malaria.—Before the Americans could begin work the Isthmus had to be thoroughly cleaned up, made a healthful place of abode. In this task the great discoveries that were made by a board of United States army surgeons in Havana, in 1900, proving that yellow fever was transmitted from one person to another only by mosquitoes of a certain species, were of the first value.

A similar discovery, that malaria is transmitted solely by another type of mosquito, had been made in 1898.

In January, 1905, the second year of American occupation, there occurred an outbreak of yellow fever on the Isthmus which lasted for the entire year and resulted in the death of 35 Americans. It was suppressed by the application of the methods prescribed by the discoverers of the theory—that is, vigorous warfare on mosquitoes and complete segregation of the victims. Since then there has been no case originating on the Isthmus.

There can be no new case of yellow fever unless there be a victim of the disease for the mosquito to bite. Without a victim the mosquito has nothing to carry and is thrown out of business. With malaria the case is different. The victim of yellow fever dies or gets well and ceases to be a source of germ supply; the victim of malaria carries the germs in his system for years and is a continual source of supply. It is thus virtually impossible to banish malaria, but it can be restricted by the use of screens for houses and by large doses of quinine. This has been done in the Canal Zone, with the result of reducing the number of cases one-third.

A Tropical American State.—What the American canal builders had to do on the Isthmus was to create a North American state in the heart of a Central American republic. They had not only to make the Canal Zone healthful, but to build dwellings for the canal forces, provide a food supply, and create a form of government, with school, court and police systems. Before work could be begun they had to assemble a working force, collect an operating plant and establish great machine shops to put the huge machinery of the plant together and keep it in repair.

This was a new field of labor for American effort and energy and of really colossal proportions. Within three years it was

accomplished and at the end of that period the work of active canal construction began with full vigor.

January, 1907, was the starting point for grand assault on the actual task of canal construction. A lock canal, rather than one at sea-level, had been decreed by Congress. Two commissions had grappled successfully with the problems of preparation, and a third commission, composed mainly of trained engineers of the Army and Navy, was about to take charge of the great task of construction under the leadership, as Chairman and Chief Engineer, of Col. George W. Goethals.

Character of the Canal.—The line of the canal across the Isthmus runs through low land from the Atlantic for a distance of about 30 miles, when it strikes the foothills of the mountains of the Continental Divide. The foothills and mountains cover a distance of nearly nine miles. After passing this obstruction the canal line runs through low land to the Pacific.

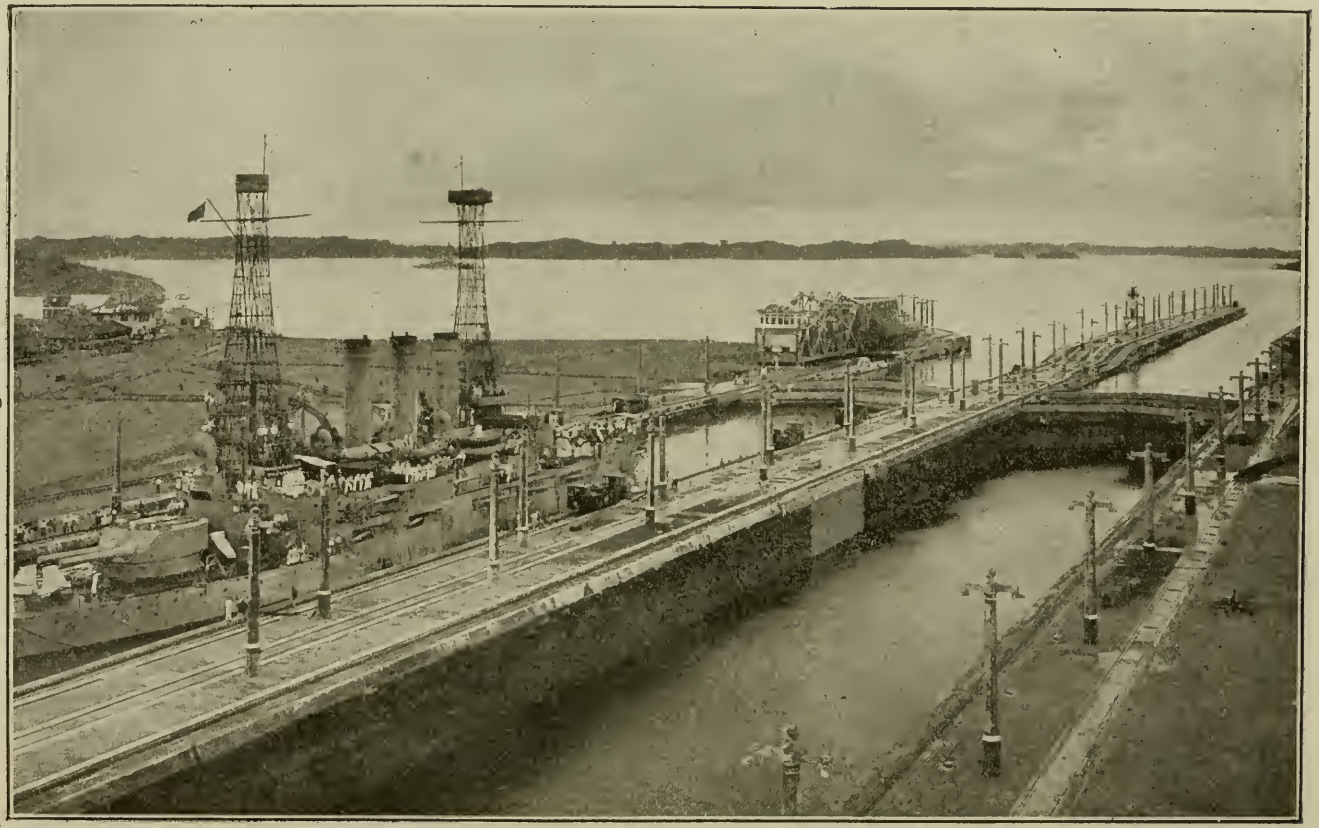
From the mountains and foothills of the divide, there stretches away toward the Atlantic on either side of a broad valley a line of hills. These hills converge as they near the Atlantic until they are within a mile and a half of each other at Gatun. The valley lies between the mountains and the hills in the shape of a horseshoe with its opening toward the Atlantic.

Into this valley the Chagres or Gatun River and several other streams pour their waters. A great dam was constructed at the opening of the horseshoe, impounding all these waters and making a huge reservoir covering 164 square miles. When full, the level of this lake is 85 feet above the mean level of the sea.

The canal itself is unlike any other in the world. It is in reality a great bridge of water, 85 feet above the level of the sea, extending nearly the entire width of the Isthmus. Gatun Lake constitutes the larger part of it.

To reach the surface of the lake, vessels must be lifted 85 feet, and this is done by means of locks, of which there are three pairs on each side of the Isthmus, making twelve in all. On the Atlantic side the three pairs are in series, like a flight of steps, and vessels pass from one directly to another. On the Pacific side there are two pairs at one point and one at another, with a small lake about a mile in length between them.

Gaillard (formerly Culebra) Cut, which is the name of the



GATUN LOCKS, LOOKING SOUTH

passage through the mountain range, is an arm of Gatun Lake. It is nearly nine miles long, its channel has a bottom width of 300 feet, and in making it 100,000,000 cubic yards of earth and rock have been removed, or nearly double the original estimate. It has a depth of 45 feet of water throughout, and its water-level is that of Gatun Lake. It extends from Bas Obispo, at the southern extremity of Gatun Lake and the valley of the Chagres, to Pedro Miguel where the first pair of locks on the Pacific side are placed. The water bridge, therefore, reaches from the Gatun dam, through the Gaillard Cut to Pedro Miguel, a distance of about 34 miles.

The width of the channel in the water bridge varies from 1,000 feet in the larger portion of the Gatun Lake to 300 feet in Gaillard Cut. The depth of water in the channel varies from 87 feet in the lake to 45 feet in Gaillard Cut. There are approach channels in both oceans, each 500 feet wide and 45 feet deep, extending from deep water in the ocean to the Gatun locks on the Atlantic side and to the Miraflores locks on the Pacific side.

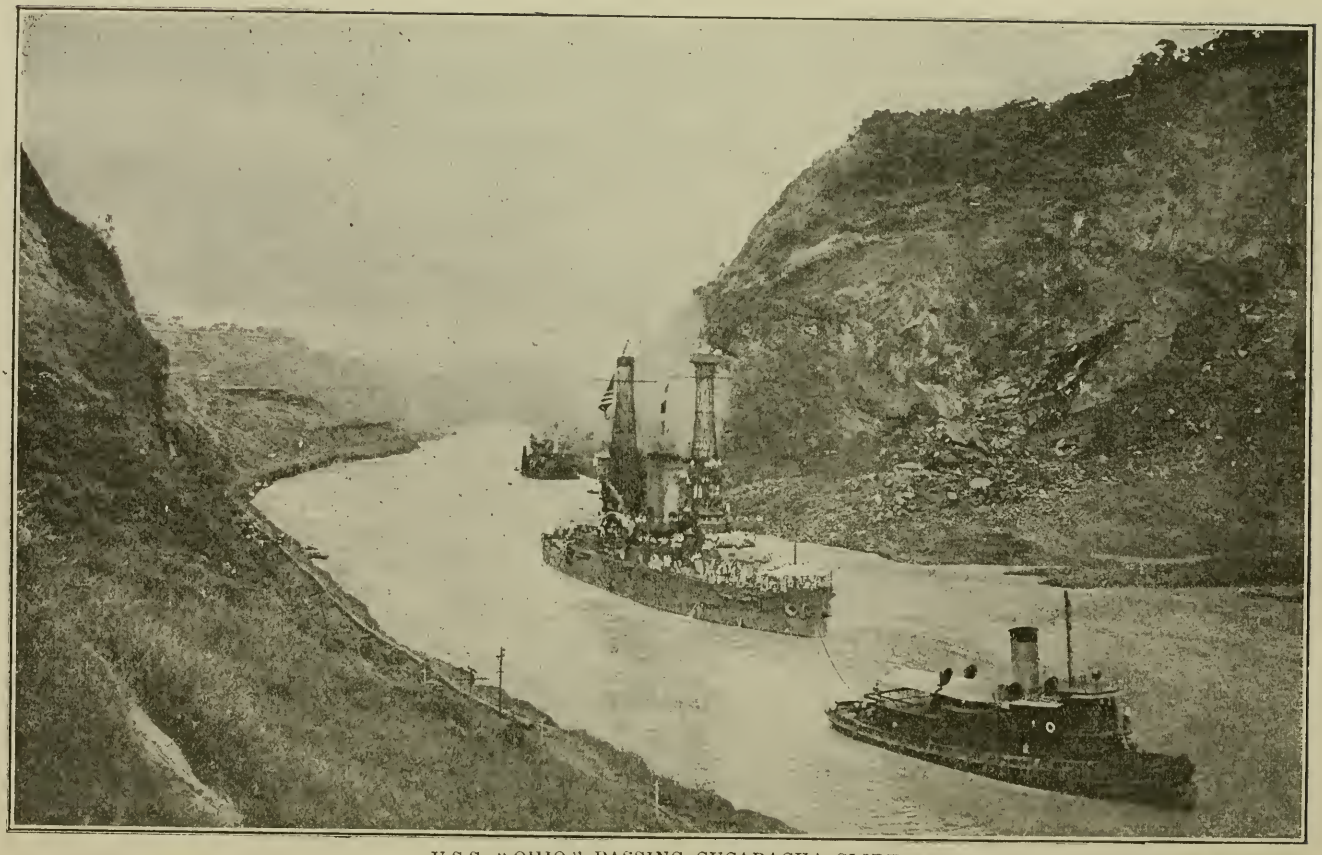
By consulting the accompanying map it will be seen that the line of the canal does not run east and west, as is quite generally supposed, but from northwest to southeast. The Pacific entrance is 22.5 miles east of that on the Atlantic. This is one of the few regions in America where one can see the sun rise in the Pacific Ocean.

The entire length of the canal, from deep water in the Atlantic to deep water in the Pacific, is about 50 miles—from shore-line to shore-line, about 40 miles. The locks are the largest in the world, and are all of the same usable dimensions—1,000 feet long and 110 feet wide. Ninety-five per cent. of the vessels navigating the high seas are less than 600 feet long.

World Wide Benefits.—By opening a new ocean highway which shortens great trade routes by thousands of miles, all nations benefit; for the inevitable effect is to cheapen transportation and reduce the price of commodities.

The new canal gives the continent of North America a continuous coast line from Labrador to Alaska, thus securing for the United States control of the commerce of the Western Hemisphere.

It reduces the distance between New York and San Francisco by 7,873 miles. It brings the west coast of South America, most of the large commerce of which has been controlled by Europe,



U.S.S. "OHIO" PASSING CUCARACHA SLIDE

3,000 miles nearer to the United States than to Europe, with the probable result of ultimately shifting control to the United States. It shortens the distance between New York and Yokohama by more than 3,000 miles, between New York and Melbourne by nearly as many, and between New York and Hongkong by 245 miles. This will give the United States the advantage in competing with Europe for the commerce of Japan, and place it on equal terms with Europe so far as distance is concerned, in competing for the commerce of Australasia, China and the Philippines.

Congress has acted wisely in decreeing that supply stations, under government control, be maintained at both ends of the canal by means of which coal, fuel oil, cold storage provisions and all other necessary supplies, as well as repairs, will be furnished to vessels passing through the canal at fixed and moderate prices. This permits vessels from European and other distant ports to reduce their bunker and provision spaces half, add thereby to their cargo capacity, and make valuable savings.

Whatever else may be the effect of this new ocean highway, cheaper commodities for the world can safely be predicted. Direct competition along many great trade lines cannot fail to secure this result. By bringing the nations of the earth into closer relations, and by developing the commerce of one with another and enhancing its value, the peace of the world will be more firmly secured; for the cost of wars, in disturbing and destroying commerce, will be an increasingly powerful influence against them.

New American Merchant Marine.—When the Panama Canal was thrown open to the commerce of the world in August, 1914, there were then in the merchant marine of the United States only about 30 ships of sufficient size and capacity to use it with profit. But one of the results of the World War has been the creation of a new and greatly enlarged American merchant marine. Whether it is to be operated by the Federal Government or by private owners, or whether in either case it will be better able to meet foreign competition than in the past, time alone can tell.

It is the opinion of most shipping authorities that no ship of less than 3,000 gross tonnage can do a profitable business through the canal, and some authorities place the limit at 4,000 gross tonnage. The average gross tonnage of all ships passing through the Panama Canal in the fiscal year 1917-18 was 4,275 tons.

There is slight probability that sailing vessels will use the canal. They would have to be towed from deep water in the ocean, as well as through the canal; and, in the case of the Bay of Panama, in the Pacific Ocean, they would in nearly all cases have to be towed about 100 miles before entering and after leaving the canal, for that bay is deep and sheltered and nearly devoid of wind during most seasons of the year. The opening of the Suez Canal caused a great reduction in the number of sailing vessels, and the effect of the Panama Canal is certain to cause a still further reduction.

An Investment Ruined.—The opening of the Panama Canal has ruined irretrievably the Tehuantepec railway route across the isthmus of that name. This was 30 years in building and cost the Mexican government $60,000,000. It was opened in January, 1907; and although it has had considerable traffic, it has been an unprofitable investment, its gross revenue being only about $3,000,000.

The chief customer of the Tehuantepec Route was the Hawaiian Steamship Company, which formerly operated a line of steamships from New York around the Horn to Hawaii and San Francisco. Since 1907 the ships of the company had used the Tehuantepec Route, but they were forced to abandon it even before the Panama Route was opened, because of revolutionary outbreaks in Mexico.

Opening of the Canal.—Water was first turned into the Gatun Locks on September 26, 1913. The canal was still closed to navigation by the Cucaracha Slide, which had slid down and almost completely blocked the bottom of the cut in 1913. So little impression had the steam shovels been able to make on it in the next nine months that it was decided to turn in the water, and use floating dredges. These were brought up through the locks from both entrances of the canal.

The first passage of an ocean-going ship from sea to sea through the Panama Canal was made by the *Cristobal* of the Panama Railroad Steamship Line on August 3, 1914. The canal was then declared open to the traffic of the world. During the first twelve months there passed through it 1,258 vessels, carrying 5,675,261 tons of cargo, the tolls on which amounted to $4,909,150.96.

In October, 1915, the canal was completely blocked by two slides directly opposite each other on the banks of the Gaillard Cut, a little north of Gold Hill. Both of these slides were of the type known as "breaks," where the weight of the banks causes the underlying material to give way. The bottom of the canal was thus pushed up, forming a complete barrier.

Because of these slides and also because of the outbreak of the Great War, which made impossible the assembling of an international fleet, there was no formal opening of the Panama Canal. It was reopened to commerce again, after the dredges had removed the slides, in April, 1916, and has remained open continuously ever since. As soon as the United States entered the war, the garrison of the Canal Zone was greatly strengthened, and every precaution taken against injury to the canal, either by spies or an attack in force. The locks were guarded by infantry and anti-aircraft guns. Mine-fields were laid at each entrance of the canal, and a constant watch maintained by warships and air-patrols. No hostile attempt was made against the canal during the war.

By facilitating the movement of troops, warships and supplies, the Panama Canal helped to win the war for the United States and our Allies.

Panama Canal Traffic.—In the fiscal year ending June 30, 1918, there passed through the canal 2,310 vessels, carrying 7,562,-133 tons of cargo, the tolls on which amounted to $6,439,083.99. Since the canal was first opened, there have passed through 5,881 vessels, aggregating 18,991,013 net tonnage, and carrying 22,-901,226 tons of cargo on which were collected tolls amounting to $18,654,380.16. Of the cargo, nitrates furnished over 23 per cent., coal 7, oil 5, and sugar 5 per cent.

The 5,881 vessels that had passed through the canal up to June 30, 1918, belonged to twenty-four different nationalities. British ships were most numerous, amounting to 2,302. American ships were second in number, 1,800; Norwegian, 533; Chilean, 263; Peruvian, 203; Danish, 184; Japanese, 155, and Dutch, 145. The only German vessels that had passed through the canal were six Hamburg-American liners seized in the Canal Zone but not issued United States registers until subsequent to canal transit.

Competition with Suez.—The Panama Canal and the Suez

Canal are to a certain extent rival trade-routes. Both impose the same toll charges, $1.20 per net ton. The increase in tonnage of the latter was more than 70 per cent. during the 10 years preceding the war. Its total receipts in 1912, $27,300,000, were the largest in its history. Up to that year, its dividends to stockholders had steadily risen till they reached 35 per cent. There was a slight falling off in 1913, the receipts then amounting to $25,200,000. Under anything like pre-war conditions, and under the danger of loss of tonnage in competition with the Panama Canal, its managers may reduce the toll charges below the present figure of $1.20, and still feel certain of a handsome profit. This possibility must be taken into consideration in estimating the earning capacity of the Panama Canal.

The closest competition will be in regard to commerce with Australia, New Zealand, Japan, China and the Philippines. So far as distance is concerned, the two canals are on equal terms in regard to that traffic. Under existing conditions, in spite of the fact that distance has been against the United States, our country has had a fair share of the great commerce of Australia and New Zealand. In 1910 the value of that share was nearly $50,000,000—consisting of the export of American manufactures to those countries, and the import from them of wool, hides and other raw materials. Australia's commerce amounts to $130 per inhabitant, and that of New Zealand to $170 per inhabitant, or five times that of the United States per inhabitant.

The United States has had its fair share in this great commerce in spite of its distance handicap. What must be the effect when the handicap is removed? It is only necessary to cite the distances saved by the Panama Canal to show that there can be only one answer to this question.

The distance from New York to Adelaide via the Panama Canal will be 1,746 miles less than via the Cape of Good Hope. To Melbourne, the reduction will be 2,770 miles and to Sydney 3,932 miles. For the voyage between New York and Sydney vessels of 10 knots speed can save 15.8 days. A calculation has been made of the fuel expenses of a 10.25-knot freight steamer whose average daily coal consumption at sea is 38 tons. This vessel would save about $3,500 in coal expenses by taking the Panama route instead of one around the Cape of Good Hope, on a

round-trip voyage between New York and Adelaide. For a round-trip voyage between New York and Sydney, the fuel expenses via Panama will be about $6,230 less than by way of the Cape of Good Hope. In making this and other calculations, the 1912 contract prices for coal are taken—since then prices have steadily risen and the saving will be correspondingly greater.

Coal Prices.—Coal is sold to vessels in passing through the canal at cost plus 25 per cent. The prices rose from $5.00 and $5.50 in 1912 to $8.00 and $9.50 in 1917, at Colon and Cristobal at one end of the canal and Balboa on the other. In 1912 the contract prices for Welsh coal at Port Said were 15 to 24 per cent. higher than the Panama prices. The action of Congress, in decreeing that coal shall be supplied by the United States Government at both ends of the canal at reasonable prices, makes certain the permanence of this great inducement for vessels engaged in far-eastern commerce to use the Panama route.

Commercial Advantages.—An examination of the possibilities of increased commerce which the shortened line of travel secures, shows that all sections of the United States are benefited thereby.

The canal gives the southern States for the first time a direct route for their chief product, cotton, to the markets of the far east. Heretofore their shipments have gone partly by rail to San Francisco, partly by vessels around the Horn, but mainly by way of New York and the Suez Canal. All this will be changed. The Gulf ports are nearer to the Colon entrance of the canal than New York is by from 500 to 760 miles. They thus have an advantage over eastern ports in the shipment of products to the orient. Japan and China have for years been large purchasers of raw cotton and cotton goods, and the shorter route is certain to make these countries larger consumers because of the reduction in price made possible by lower freight rates.

The iron and steel industries of the south, which have shown such remarkable growth, the lumber business, its forest products —turpentine, resin, tar, etc.,—the fertilizing industry, all are certain to be greatly benefited for the same reason.

The commercial importance of the Gulf ports will be greatly increased by the use of the canal. All points south and west of Lake Superior, Northern Michigan, Lake Michigan, and a line drawn from Chicago through Indianapolis, Frankfort, Ky., and

on to Charleston, are nearer to New Orleans and to several Gulf ports than to New York. Distance is a powerful, although not a controlling factor, in determining traffic routes; and there can be no question that the Gulf ports, through their ability to bring the railway car and the steamer side by side at terminals, in addition to their ability to assure a shorter and quicker passage, will add enormously to their commercial importance.

The northeastern section of the United States ranks first in manufacture and foreign commerce. It has a large foreign trade in manufactured products, made partly from domestic and partly from imported materials. A portion of the imports comes from tropical and south temperate latitudes of the Atlantic, Pacific and Indian Oceans—nitrate of soda from Chile; lumber and grain from the Pacific Coast; wool, meats and hides from Australia; teas, silks and mattings from the orient; sugar, rice, jute, hemp, vegetable oils and gums from the British and Dutch East Indies and Oceania. Europe secured a nearer market for raw materials by means of the Suez Canal. Our American manufacturers will obtain the same privilege, in equal measure, by means of the Panama Canal. The gain for American manufacturers cannot fail to go far in putting them on an equal footing with their European competitors.

The twelve States of the central west are situated from 500 to 1,500 miles from the ocean. The trade which the Panama Canal may bring to them will, on an average, be moved nearly 1,000 miles by railroad. While the most important industrial resources of the section taken as a whole are agricultural, there are also large manufacturing interests in several of the States, large coal fields, oil and natural gas wells, and forests.

The opening of the canal, by emphasizing the commercial importance of the Gulf ports and giving fresh impetus to the work of improving the great river systems, will give to the central west the opportunity to choose between the Gulf and Atlantic routes of shipment, and the competition thus instigated will quicken industrial activity and secure better transportation facilities.

In many ways the opening of the canal will be of very great benefit to all the States of the Pacific Coast. A cut of 7,873 nautical miles in a total distance of 13,135, could not have any other effect.

Their great interests, grain, lumber, horticulture, fisheries and mining, will all be benefited. Their wheat, barley, lumber and non-perishable food products—nuts, raisins, olives and canned fruits—have previously gone around the Horn to the eastern States and Europe. The shipment of fresh fruit for long distances, while likely to continue to be made largely by rail, can, with modern refrigerating facilities, readily be shipped in steadily increasing amounts by vessels, as the time of transit through the canal is diminished with the advancing speed of steamships.

The general effect of the canal upon the people of the Pacific Coast will be to enable them to buy more cheaply, and to carry on a larger trade, both domestic and foreign. The northern ports will become the natural gateways for the export trade of Idaho, Montana and Wyoming, and for commerce with British Columbia.

It is regarded as certain that the canal will greatly increase the volume of coastwise trade of the United States. The combined tonnage of American ships at present engaged in that trade on the Atlantic, Gulf and Pacific seaboards exceeds 3,500,000. During the past decade the increase has been 38 per cent. It is a large and healthily increasing business, and its operators look for a very considerable addition to its fleet of ships to handle the larger volume of traffic which the canal will bring.

A Credit to the Nation.—The Panama Canal is one of the great engineering feats of the ages. It was completed ahead of the time fixed, for several million dollars less than the estimated cost, in a manner so excellent as to defy criticism, and without scandal of any sort. It was a great administrative as well as a great engineering task, for the expenditure of $375,000,000 had to be regulated and guarded and a colony of 60,000 souls—the number of the canal workers and their dependents—had to be governed.

It is the work of Americans, and the manner of its accomplishment has brought honor to the nation throughout the world.

THE SUEZ CANAL

Early Attempts.—The Panama Canal has been thought of and talked about for nearly four hundred years, but the first Suez Canal was already finished and in use four hundred years before the time of Solomon. The historian Strabo declared that Seti, father of Rameses the Great, dug a ditch fifty-seven miles long and wide enough for the largest vessels of that day—fourteen hundred years before Christ—from Bubastis on the Pelusiac branch of the Nile, to Hieropolis on the Bitter Lakes, then the head of the Gulf of Suez, at the northern end of the Red Sea. In the course of centuries, this became filled with sand; and eight hundred years later, according to Herodotus, Necho II attempted to clear it; but desisted after the lives of one hundred and twenty thousand men had been sacrificed in the desert, because of a prophecy that, should the canal be completed, Egypt would fall into the hands of the barbarians.

Likewise the Persian Darius, who took up the work a hundred years later, abandoned it because the engineering experts of the period feared that the land would be flooded. But Ptolemy Philadelphus, in B.C. 285, built a canal from the Nile to Arsinoe, not far from the present Suez, which in two centuries largely filled up. Roman engineers, under the emperors Trajan and Hadrian, cleared and repaired the old waterway; but when the Muhammadans under Amrou conquered Egypt, they found the canal once more blocked and, after vainly trying to keep it open, abandoned it again to the drifting sands of the desert.

Soon after his conquest of Egypt, in 1798, Napoleon ordered his engineers to make surveys for a direct canal from the Mediterranean to the Red Sea. They did so, but made the erroneous report that the level of the Red Sea was some thirty feet above that of the Mediterranean.

Lieutenant Waghorn, of the Royal Navy, made surveys of his own; but his desire for a canal was over-ruled by the British representative in Egypt.

Interest of Lesseps.—These facts were well known to Ferdinand de Lesseps, who had been a diplomatic representative of France in Egypt, as had also his father before him.

At fifty years of age he had had no training whatever in technical engineering. But he was a consummate diplomat and financier, and, while the engineering problems of the Suez Canal were childishly simple, the diplomatic and financial difficulties were very great. In the end he overcame diplomatic and financial difficulties, especially British opposition, and the "big ditch" was formally opened in 1859.

The total length of the Suez Canal is just under 100 miles, or twice that of the Panama Canal. Its cost is difficult to state exactly. After a stormy history of excavation of sand and rock, and of Egyptian bankruptcy and rebellion, the canal was purchased by Great Britain.

Effects of the Canal.—With several thousand British regulars in Egypt, the strong fortresses of Malta in the Mediterranean and Aden and Perim in the Red Sea, Great Britain has little cause to fear that any other power will seize Suez and cut her off from India. Moreover, by an international convention in 1888, the leading nations of the earth, including Great Britain and the United States, agreed to the neutralization of the Suez Canal.

Troops from India, Australia and New Zealand, coolie laborers, and supplies from the entire East were brought to Europe through the Suez Canal during the World War, and helped immeasurably to bring it to a victorious end.

Since its opening, the canal has been frequently widened and deepened, to keep pace with the increased number and growing size of the ships that pass through it. It is now 35 feet deep and has a bottom width of 135 feet. It has always been necessary, whenever two large vessels meet in the canal, for one to turn into the nearest dock or siding dug out of the side of the canal at frequent intervals. There it ties up to the bank while the other ship passes.

This, however, is not true of the Bitter Lakes, where ships can steam as freely as if in the open sea or on the Gatun Lake section of the Panama Canal. Except in the Bitter Lakes, ships passing through the Suez Canal cannot steam faster than four knots an hour, for fear of bringing down the sandy banks with the wash

from their propellers. Electric searchlights, first introduced in 1887, make night navigation possible and double the efficiency of the canal. Dredges are constantly at work keeping the entrances clear of silt, and removing sand and mud that continually accumulates in the channel.

The tolls on a vessel passing through the Suez Canal amount to $1.20 a ton, and $2 a head for adult passengers, exclusive of the crew.

It was anticipated that the opening of the Suez Canal would do much toward restoring the old commercial supremacy of the Mediterranean countries. But the country that was most benefited was the one that had done most to delay the building of the canal—Great Britain. As long as the trade between Europe and the far east was carried on by way of the Cape of Good Hope, sailing ships could hold their own with steamers, for there were few coaling stations on the African coasts, and too much cargo room had to be sacrificed to bunker capacity. But the opening of the Suez Canal, by shortening trade-routes, made the iron screw-steamer more profitable than the sailing ship; and England had the necessary capital, the coal and iron, and the skilled shipbuilders and engineers of the Clyde and the Tyne.

English ships have always been overwhelmingly in the majority at Suez. 2,951 British vessels passed through the canal. In 1913 the Germans being second with 778. In the last few years, there has been a significant growth in the number of Japanese vessels passing through Suez. But the American flag was never seen there before the World War, except on a warship, an army transport or a yacht.

One unexpected result of the opening of the Suez Canal was that it brought the Philippines so much nearer Spain that large numbers of Spaniards hurried out to the islands to seek their fortunes, and exploited the natives so vigorously that the latter rose in a series of revolts culminating in the possession of the Philippines by the United States. Even now that the Panama Canal is opened, Manila is almost equi-distant from New York by either route.

During the year 1912, 20,275,120 tons of shipping passed through the Canal, an increase of nearly 2,000,000 tons over the year of 1911. The total receipts of $27,300,000 were the greatest

in the history of the Canal. During the year 5,373 ships passed through the Canal, and of these 3,335 flew the British flag. In 1913 traffic fell off somewhat; and since then, owing to the war, has been light.

Saving of Distances.—Some idea of the saving of distance by the creation of Suez Canal can be obtained from the following statistics:

From England to Bombay,	via	Cape of Good Hope,	10,860	miles
" " "	"	Suez Canal,	4,620	miles
Petrograd	"	" Cape of Good Hope,	11,610	miles
" " "	"	Suez Canal,	6,770	miles
New York	"	" Cape of Good Hope,	11,520	miles
" " "	"	Suez Canal,	7,920	miles

SOME FEATURES OF THE FLAT-GLOBE

The student of geography may learn quickly to use the Flat-Globe in an intelligent manner. The hemispheres are placed back to back so as to coincide perfectly, thereby giving the effect of a globe. Arranged in this manner, direction and relative position are as accurately studied as though a globe were used, while there is no such inconvenience as one finds in use of a globe.

Highways of the Seas.—The principal ocean highways and the distance in miles between ports are shown in dotted red lines on the Flat-Globe. By following these lines from one hemisphere to the other, one may get a globe effect, as a given degree of latitude or longitude in one hemisphere corresponds to the same degree in the other. This brings all parallels and meridians correctly in place.

To show how vessels sail around the world, follow the line from New York City across the Atlantic, past the Azores to Gibraltar, through the Mediterranean Sea, Suez Canal, Red Sea, Gulf of Aden, across the Arabian Sea to Ceylon, then through the Indian Ocean to Australia, to Melbourne and New Zealand, then across the Pacific Ocean through the Panama Canal, and thence across the Caribbean Sea and on the Atlantic Ocean to New York City.

The Zones are situated within fixed circles on each hemisphere; and they are imaginary belts, called Tropical or Equatorial, North Temperate, North Polar or Arctic, South Temperate and South Polar or Antarctic. The Tropical Zone is situated between the Tropic of Capricorn, a dotted line 23½ degrees south of the equator, and the Tropic of Cancer, a dotted line 23½ degrees north of the equator. The Polar Circles are each 23½ degrees from the nearest pole. The North Temperate Zone is situated between the Arctic Circle and the Tropic of Cancer; the South Temperate Zone between the Antarctic Circle and the Tropic of Capricorn.

The North Polar Zone lies within the Arctic Circle, and the South Polar Zone is within the Antarctic Circle.

Dotted black lines illustrate the limits of ordinary navigation toward the poles, the limits of the heavy drift ice, and the coral reefs and islands. The zones of the planetary winds are indicated on the margin, and the direction of ocean currents are distinctly charted.

Standard Time.—Differences of time may be converted readily into differences of longitude, and vice versa. When it is noon on the prime meridian, for example, it is earlier for places to the west of Greenwich by one hour for every 15 degrees of west longitude; it is later in all places east of Greenwich. Thus, the surface of the earth may be divided into spaces by meridians fifteen degrees apart, beginning with Greenwich. These meridians are hour-circles. The first three hour-circles west of Greenwich are in the Atlantic Ocean; the fourth, the meridian of 60°, passes through Labrador and the Gulf of St. Lawrence; the fifth, the 75th meridian, is near Philadelphia; the sixth, or 90th meridian, is near St. Louis; the seventh, or 105th meridian, is near Denver; and the eighth, or 120th meridian, is the western boundary of Nevada.

From these standard meridians, standard railway time in North America is now taken, each company adopting the time of the hour-circle nearest the greater portion of its road. The names applied to these standards are Maritime or Atlantic, on the 60th meridian; Eastern, on the 75th meridian; Central, on the 90th meridian; Mountain, on the 105th meridian; Pacific, on the 120th meridian.

For the convenience of railway time tables, standard time does not change at the exact meridian; the change is made usually at the end of a division where train crews are changed. It often happens that the business and domestic time of a city varies from standard, being kept more nearly to solar or true time.

In order to conserve daylight it is generally customary in Europe, and of late in America, to set the time one hour ahead at 2:00 A.M. about the last Sunday in March or the first Sunday in April. This is known as "summer time." Normal time is restored in October.

All places within the same time belt have nominally the same time. On the meridian of 75° west near Philadelphia, for exam-

ple, it is noon at the same instant from the north to the south pole.

Time Around the World.—At the equator on the Flat-Globe are shown twenty-four clock faces, one for every hour of the day. When it is twelve o'clock, noon, at Greenwich, longitude 0°, at fifteen degrees east of that point it is one o'clock P.M., and at fifteen degrees west it is eleven o'clock A.M.; and for every additional fifteen degrees east or west of Greenwich, to the 180th meridian or International Date Line, where it is midnight, there is a difference of one hour in time. East of Greenwich it is P.M., west of Greenwich it is A.M. For example: to find the time of day at any point, say, from St. Louis, Missouri. If it is twelve o'clock, noon, at St. Louis, it is later to the east, and earlier to the west. One may readily reckon the time from any point by noting the longitude of the given place, and following the dials therefrom, allowing one hour for each fifteen degrees.

To Find the Latitudes and Longitudes of Places.—To find the latitude of any place, find the parallel nearest to the place, and follow it to the right or left margin of the map, maintaining the approximate distance above or below the line, as the Flat-Globe shows a line at every ten degrees; if north of the equator it is in north latitude, and if south of the equator it is in south latitude.

To find the longitude of any place, start from the equator on a meridian nearest to that point and approximate the degrees in longitude from the figures that show at a distance of five degrees on the equator; bearing in mind that the places to the right or east of the meridian of Greenwich to 180 degrees are in east longitude, and those to the left of Greenwich to 180 degrees are in west longitude.

Approximate Ocean Distances.—A nautical mile is approximately 6,086 feet; a statute or English land mile is 5,280 feet; a nautical mile is therefore equal to about 1.15 statute miles. A knot is a rate of speed of one nautical mile per hour. Actually it is the distance between any two knots in the log line that is used in finding the speed of a vessel. On a clear day two steamers approaching each other on parallel lines at 20 knots speed will meet at the end of fifteen minutes after their hulls first become visible to the naked eye, and at the end of another fifteen minutes will have passed out of sight astern.

CUSTOMS DISTRICTS AND PORTS OF ENTRY OF THE UNITED STATES

District	Chief Port	Number of Ports in District
Alaska	Juneau	12
Arizona	Nogales	4
Buffalo	Buffalo	5
Chicago	Chicago	3
Colorado	Denver	1
Connecticut	Bridgeport	9
Dakota	Pembina	14
Duluth and Superior	Duluth-Superior	7
El Paso	El Paso	4
Florida	Tampa	12
Galveston	Galveston	4
Georgia	Savannah	4
Hawaii	Honolulu	5
Indiania	Indianapolis	2
Iowa	Des Moines	3
Kentucky	Louisville	2
Maine and New Hampshire	Portland	26
Maryland	Baltimore	5
Massachusetts	Boston	12
Michigan	Detroit	21
Mobile	Mobile	4
Montana and Idaho	Great Falls	5
New Orleans	New Orleans	2
New York	New York City	6
North Carolina	Wilmington	6
Ohio	Cleveland	12
Omaha	Omaha	2
Oregon	Portland	4
Philadelphia	Philadelphia	6
Pittsburgh	Pittsburgh	2
Porto Rico	San Juan	9
Rhode Island	Providence	2
Rochester	Rochester	6
Sabine	Port Arthur	2
San Antonio	San Antonio	9
San Francisco	San Francisco	3
Southern California	Los Angeles	5
South Carolina	Charleston	3
St. Lawrence	Ogdensburg	15
St. Louis	St. Louis	3
Tennessee	Memphis	4
Utah and Nevada	Salt Lake City	
Vermont	St. Albans	1
Virginia	Norfolk and Newport News	6
Washington	Seattle	20
Wisconsin	Milwaukee	9

New York (Sandy Hook) to	Naut. mi.	New York (Sandy Hook) to	Naut. mi.
Alexandria	4,988	Hamburg	3,510
Algiers	3,564	Havre	3,094
Amsterdam	3,335	Liverpool	3,032
Antwerp	3,208	Lizard	2,934
Azores	2,250	London	3,222
Bermuda	691	Marseilles	3,900
Bremen	3,484	Milford Haven	2,875
Cherbourg	3,027	Naples	4,140
Christiania	3,425	Newfoundland, Banks of	960
Copenhagen	3,800	Plymouth	2,946
Dover	3,160	Prawle Point	2,959
Fastnet	2,800	Queenstown, Roche Point	2,772
Genoa	4,060	Rotterdam	3,290
Gibraltar	3,200	Scilly, Bishop Rock	2,886
Glasgow	2,950	Southampton	3,100

DISTANCES AND MAIL TIME FROM NEW YORK CITY

By Postal Route To—	Miles	Days
Adelaide, *via* San Francisco	12,845	34
Alexandria, *via* London	6,150	14
Amsterdam, " "	3,985	9
Antwerp, " "	3,208	9
Athens, " "	5,655	14
Bangkok, Siam, *via* San Francisco	12,990	43
Batavia, Java, *via* London	12,800	35
Berlin, *via* London	4,385	9
Bombay, " "	9,765	26
Bremen, " "	4,235	9
Calcutta, *via* London	11,120	29
Cape Town, *via* London	11,245	27
Constantinople, *via* London	5,810	13
Florence, *via* London	4,800	10
Glasgow	3,375	9
Hamburg, *via* London	4,340	9
Hong Kong, *via* San Francisco	10,590	30
Honolulu, " " "	5,645	13
Liverpool	3,540	8
London	3,740	8
Madrid, *via* London	4,925	10
Melbourne, *via* San Francisco	12,265	32
Paris	4,020	8
Rome, *via* London	5,030	10
Rotterdam, *via* London	3,935	9
Petrograd, *via* London	5,370	11
Shanghai, *via* San Francisco	9,920	10
Stockholm, *via* London	4,975	31
Sydney, *via* San Francisco	11,570	9
Vienna, *via* London	4,740	22
Yokohama, *via* San Francisco	7,348	31

	Naut. mi.
New York to Sandy Hook	18
Sandy Hook to Sandy Hook Lightship	8
Sandy Hook Lightship to Fire Island	30
Fire Island to Shinnecock	35
Shinnecock to Nantucket Lightship	122
Baltimore to Hamburg (Cuxhaven)	3,813
Baltimore to Southampton	3,405
Baltimore to Queenstown (Roche Point)	3,118
Philadelphia to Hamburg (Cuxhaven)	3,633
Philadelphia to Southampton	3,223
Philadelphia to Queenstown (Roche Point)	2,950
Boston to Hamburg (Cuxhaven)	3,278
Boston to Southampton	2,868
Boston to Queenstown (Roche Point)	2,581

Index to Map Coloring.—The physical features are shown on the Flat-Globe by the most modern system of color-printing. Political boundaries are clearly but inconspicuously marked by purple lines. The elevation of the land is shown by colors and shades, as follows:—

1. Land below sea-level, purple.
2. From sea-level to 1,000 feet, green.
3. From 1,000 to 2,000 feet, yellow.
4. From 2,000 to 5,000 feet, buff.
5. In the Western Hemisphere, land above 5,000 feet, deeper buff.
6. In the Eastern Hemisphere, land from 5,000 to 15,000 feet, buff like No. 5 above.
7. In the Eastern Hemisphere, land above 15,000 feet, a deep reddish buff.

EDITORIAL NOTE

This Globe and History have been carefully designed to meet the needs of all places of learning, private homes and business and professional offices. Very slight alterations of boundaries and of the status of countries may follow the final deliberations of the Peace Conference; but both the Globe and the text of the History have been brought up-to-the-minute, and such changes as may be slowly brought about within the next year or two will be inconsiderable. These little changes have been forecast in the descriptions of the various countries and regions under "National and Political Geography."

NATIONAL AND POLITICAL GEOGRAPHY

Political Divisions of the World

Sovereign Nations and Independent States.—In each continent are a few independent countries; most in Europe and least in Africa. Few of the islands are independent; most of them are dependencies of one or another nation, the British Empire holding more than all the rest of the nations together. The total area of the land surfaces of the globe is 52,000,000 square miles; of this, 24,940,000 square miles or 48 per cent. is free, and the remainder tributary.

Following is a list of sovereign states and independent countries at the present time:

NORTH AMERICA

Costa Rica	Nicaragua
Cuba	Panama
Guatemala	Salvador
Haiti	Santo Domingo
Honduras	United States of America
Mexico	Total 11

SOUTH AMERICA

Argentina	Ecuador
Bolivia	Paraguay
Brazil	Peru
Chile	Uruguay
Colombia	Venezuela

Total 10

EUROPE

Albania	Liechtenstein
Andorra	Lithuania
Austria	Luxemburg
Belgium	Monaco
Bulgaria	Netherlands, The
Czecho-Slovakia	Norway
Constantinople, State of	Poland
Denmark	Portugal
Esthonia	Rome, See and Church of
Finland	Rumania
France	Russia
Germany	San Marino
Greece	Spain
Hungary	Sweden
Iceland	Switzerland
Italy	United Kingdom of Great
Jugo-Slavia	Britain and Ireland
Latvia	

Total 34

ASIA

Afghanistan	Nepal
Bhutan	Oman
China	Persia
Hedjaz	Siam
Japan	Turkey

Total 10

AFRICA

Abyssinia	Liberia

Total 2

Total sovereign nations and independent states, 67

Colonies and Other Dependencies.—Most large nations, especially those of Europe, have acquired colonial possessions in order to secure space for surplus population, sources for raw material, and new outlets for their trade in manufactures. In some cases these possessions are so administered as to build them up, in others they are gouged and their native inhabitants mistreated and repressed. Most of the trade of dependencies is with the parent country, and this tendency is often strengthened by mutually preferential tariffs. A conspicuous example of a new, undeveloped region parceled out among the stronger nations is

Africa; of which, out of a total area of 11,498,000 square miles, less than 600,000 are free.

In the following descriptions, the larger and better known dependencies are treated under their own names; the remainder, cited alphabetically, are referred to the parent country for description. The whole is thus a self-indexed gazetteer and encyclopedia.

Abgarris Islands:—see Bismarck Archipelago, p. 158.

Abyssinia (Ethiopia).—A native empire in East Africa. Latitude 15°–3° north, longitude 32°–47° east; area, about 350,000 square miles; population, estimated between 3,500,000 and 5,000,000, no official census. Except that Abyssinia in early times was intimately connected with Egypt, there are no records of its ancient history. The natives claim to be descended from Solomon, king of Israel. Queen Sheba of Biblical fame was reported to be a queen of Abyssinia. A treaty between Menelek II and Great Britain, France, and Italy guarantees the integrity of the nation and provides for the building of railways. The men are, all things considered, the finest and most independent in the Nile watershed.

A rugged plateau mostly, 8,000 feet above the level of the sea. In the center of the country is a great depression, occupied by Lake Tsana, the principal source of the Blue Nile. The chief products are coffee, wild indigo, cotton, sugar-cane, and dates. A fine variety of mocha coffee is grown for export. A native coffee plant is cultivated for domestic use. The country has many valuable forest trees. The capital is Adis Ababa. Other towns—Harrar, 40,000; Ankober, Axum, Gondar. No towns except Harrar have a permanent population above 6,000, but great market celebrations swell the numbers at times.

The country is almost exclusively agricultural, but tillage is very inadequate. The higher plateaus are adapted for European cereals. The western lowlands are hot and unhealthful. Industries are very little developed. Mules and donkeys chiefly are used for transportation. The French railroad from Jibuti to Harrar and Adis Ababa is completed. Religion, Christian (Coptic). The exports are coffee, dates, ivory, gums, skins; imports, cotton goods, firearms, sugar, and coal oil. Exports (1913) about $3,750,000; imports about $1,000,000, chiefly from England, France, India, Italy and United States.

Aden:—see British Possessions; Asia, p. 165.

Adrar:—see Rio del Oro and Adrar, p. 259.

Admiralty Islands:—see Bismarck Archipelago, p. 158.

Afghanistan.—A despotic monarchy in south-central Asia. Latitude about 38°–29° north, longitude 61°–75° east; area, about 245,000 square miles; population, 6,000,000; capital, Kabul, population, 180,000; other cities—Kandahar, 40,000; Herat, 20,000. Its early history is obscure. For centuries it was a shuttlecock between Persia and India. In 1839 a British army of 16,000 was massacred in Khaibar Pass. It is now nominally independent, but practically a British protectorate. It is situated between Persia and India, and is of the greatest importance to Great Britain from the fact that Khaibar Pass, the chief overland route to India, is within its territory. It is one of the most barren countries in the world. Sand, bare rocks, sterile hills, and vast snow-capped mountains are the main features of this stern, inhospitable country. In summer it is hot everywhere except at high altitudes. The daily temperature range is great. The temperature depends upon the elevation and not upon the latitude. Stony, treeless slopes, parched soil, and whirling sand storms increase the heat and dryness of the scorching air. Winter brings frost, snow and blustering storms. One moment a traveler may be in the sun's glare and the next he is pierced by the icy wind. The products are wheat, barley, rice, millet and Indian corn. Fruits, such as figs, pomegranates and almonds, are produced in large quantities. The Bactrian camel, fat-tailed sheep and goats are reared. Agriculture is maintained at a high standard, and irrigation is almost as perfect as in China. The manufactures are mainly felts and carpets of wool and hair, silk and firearms.

The Afghans are a Semitic people resembling the Persians and the Muhammadans of India, with whom they apparently are related. They are unfriendly to foreigners. Religion, Muhammadan. Foreign commerce is inconsiderable. Carpet rugs are exported to the United States; lumber, fruits, grain, and asafoetida are sent to India, with which country most of the foreign commerce is carried on, the products passing from Kabul by the Gomal route. Exports into India (1916–17), about $5,750,000; imports (1916–17), about $5,720,000.

Africa.—A continent comprising the largest of the three main

southward projections of the continental shields. Extends from 37° 21′ north, to 34° 15′ 35″ south in latitude, and in longitude from 17° 33′ 22″ west to 51° 27′ 52″ east. Area, exclusive of islands, 11,262,000 square miles; its islands add 236,000 square miles. It is especially characterized by the regularity and shortness of coast-line, and by the small amount of low coastal land, resulting in relative inaccessibility of much of the interior. Scarcity of good harbors and the difficulty of transportation to the interior imposed by topography and climate, have been important factors in retarding its economic development. While parts have been known since very ancient times, and whole civilizations have risen and fallen there, most of its surface has been unknown to white men until within a century, and much is still unexplored in detail. Of a very considerable part only the most meagre maps are available. Its native races are largely Berbers, Hamites, and Semites in the north and Negroes and Negroids in the remainder of the continent. These are all relatively low in civilization, as compared with advanced nations, and the larger part of the people are still in a state of savagery or semi-savagery.

The development of much of the country has been advanced within the last half-century by Europeans, often through unfair and cruel exploitation. The English, however, have notably aided the natives of parts under their control, so that their productiveness has increased and their scale of living advanced. With its climatic range—from humid tropical to temperate, with its vast wealth of mineral and vegetable resources, and with the agricultural possibilities of the more favored parts, Africa holds unlimited opportunities for development. Parts probably will never be reclaimed, as the great deserts on the one hand and much of the tropical jungle on the other; but with these deducted there is yet a vast area that can be made in future to minister to man far more than in the past.

Alaska.—A territory of the United States formerly known as Russian America. Latitude 72°–52° north, longitude 130° west–172° east; area, 590,884 square miles; population (1915) estimated, 66,000; capital, Juneau; other cities—Fairbanks, Nome, Copper City, Valdez, and Seward.

This territory, including the Aleutian Islands, came into the possession of the United States by purchase from Russia in 1867,

at a cost of $7,200,000 in gold. Congress created Alaska a civil and territorial government May 17, 1884. At the time of its purchase from Russia it was called "Seward's folly." In its resources in fur-bearing animals, gold, copper, coal, petroleum, salmon fisheries, and timber, Alaska is one of the foremost regions in the world. The salmon fisheries alone yield an income of more than $15,000,000. The mineral output (1916) is about $50,000,000. The seal fisheries at the Pribiloff Islands are closed. It has vast lumber districts in its southern parts. Cedar is abundant. Its coast line is over 18,000 miles, or more than that of all the United States proper. There are 61 volcanoes, 10 of which are active. Katmai, with its "valley of ten thousand smokes," is the most famous. Alaska is one of the great glacial regions of the world. There are numerous hot mineral and boiling springs. Medicinal springs abound. Its great river, the Yukon, is navigable for upwards of 1,000 miles.

The gold placer deposits of the Tanana, Copper and Koyukuk Rivers and Porcupine Creek are conspicuous for their yield. Copper is mined in the Copper River, upper Tanana, and other districts, and is the chief metal in value (1916, $29,500,000). The gold product (1916) is not far from $17,000,000. Coal is mined along the Yukon, and valuable deposits on Controller Bay await exploitation. Petroleum occurs at Controller Bay and at Cook's Inlet. The petroleum lands have been withdrawn from exploitation by the government. Tin is mined at Seward Peninsula. The yearly product (1916) is valued at $121,000. The coal fields are likely to prove the most valuable mineral asset. The most available fields are not far from Prince William Sound. They are reached by railways now nearing completion. In a few districts much hay and a good variety of field crops can be raised. Reindeer for draft and meat purposes are multiplying. A railway from Skagway to the head of navigation of Yukon River is in operation. Lines from Cordova to Copper City, and from Seward to Fairbanks are nearing completion. A cable from Seattle connects the most important coast towns with the United States, and a system of internal telegraphs is in operation.

Albania.—Albania was originally carved out parts of western Turkey, and has been an independent state since 1912. The ruling prince left upon the outbreak of the World War, and the country

has been without a responsible head, having been speedily overrun by Austrian troops. The Peace Conference proposes to erect the country into a permanent state. The inhabitants are largely a distinct race, separate from the Montenegrins, Serbs and Greeks who are adjacent to them. The boundaries are likely to be approximately those of 1914, except for a slight extension to the northeast and north, and the deduction of the Greek population at the south. As thus constituted, it lies between 42°40′–40° 40′ north, and 19° 10′–21° 5′ east. Its area in 1914 was about 11,000 square miles, its new area may be 9,500 to 10,000 square miles; population (1914), between 800,000 and 800,500. Large numbers were lost during the war. Principal towns, Durazzo, former provisional capital; Scutari, 32,000 (1914); Elbasan, 13,000; Tirana, 12,000. The country suffered much under Turkish rule, and had no time to recover thereafter. The inhabitants are of a fine type, capable of great progress. Most of the territory is quite undeveloped, and transportation facilities must be provided before it can yield to modern economic influences.

Aleutian Islands:—see United States of America, p. 278.

Alfi Island:—see New Caledonia, p. 243.

Algeria.—The most important colony of France; situated on the Mediterranean coast of Africa. Latitude 37°–32° north, longitude 2° west–8° east; area, 174,474 square miles, exclusive of the Sahara dependency to the south (750,000 square miles); the main economic portion occupies 343,500 square miles; population (1916), estimated, 5,230,000, no official census; capital, Algiers, 172,000; other cities—Oran, 123,000; Constantine, 65,000; Bône, 42,000—all estimated. Algeria is a part of the north coast known, with Morocco and Tunisia, as Africa Minor. The Romans built the trading-post known as Cæsarea at the site of Algiers. The state was formed at the time of the Turkish conquest, in the sixteenth century. It became a French colony about 1830.

The climate resembles that of southern Italy. The coast is divided into several long strips by the parallel chains of the Great and Little Atlas—the coast plain, partly cultivable; the Tell, the chief agricultural and stock-farming region; the great plateau with interior drainage and salt lakes; and the Algerian Sahara, with fertile oases. The chief crops are grain, wine, oil, tobacco, dates and southern fruits. Large quantities of vegetables are

raised for the markets of France. Cork and esparto grass for paper making are exported. The fisheries are extensive. Horses, camels and sheep are of superior quality. The country is rich in phosphates, and yields iron, copper, lead and salt. The Arab natives make carpets and other distinctive wares. The French have few manufactures. Wagon roads are good, and nearly three times the length of the railroads, of which over 2,000 miles have been built. The population consists mainly of Berbers, or natives, French, Italians, and Jews. The prevailing religions are Muhammadan, Christian, and Jewish. The foreign trade is carried on almost wholly with France, to which it sends foodstuffs, and from which it receives manufactures. Exports (1916), $106,775,000; imports, $106,000,000.

American Samoa:—see United States, Outlying Territories, p. 285.

American Virgin Islands:—see United States, Outlying Territories, p. 285.

Amsterdam Island:—see French Possessions; Africa, p. 199.

Anatolia:—see Turkey, p. 274.

Anchorite Island:—see Bismarck Archipelago, p. 158.

Andaman Islands:—see India, p. 219.

Andorra.—An autonomous and semi-independent state in the Pyrenees. Latitude 42° 30′ north, longitude 1° 30′ east; area, 191 square miles; population (1916), 5,231. It is nominally under the sovereignty of France and the Bishop of Urgel, Spain; practically it is independent. It is so small that a cannon shot fired from any part will lodge in foreign territory. A prefect has charge of French interests.

The inhabitants continue to govern themselves in accordance with old feudal customs. The land belongs to a few families. Cattle breeding and a little iron and woolen manufacturing are the chief industries. The village of Andorra is the capital, but San Julia de Loria is a more important place. The Spanish language chiefly is spoken. Foreign commerce is negligible.

Angola:—see Portuguese Possessions, p. 258.

Anglo-Egyptian Sudan:—see Egypt, p. 191.

Annam:—see French Indo-China, p. 197.

Annobon Island:—see Spanish Guinea, p. 269.

Antarctica.—A name commonly given to the land and ice areas

of the South Polar region. The territory presents two contrasts with the North Polar region. The antarctic ice extends into much lower latitudes than the arctic; so that, while there are habitable lands far within the Arctic Circle, there is none in the Antarctic, and the pack ice lies often considerably outside the circle.

The second point of contrast is that in the arctic there is no continental area, but deep sea covered with ice, as Peary and others have shown; while the antarctic area, rising to heights of 11,000 feet and more at and near the pole, with mountain peaks protruding here and there through the glacial ice, is almost certainly a continent, partially submerged, so that it is fringed with a host of islands.

These islands and peninsulas, although bearing names indicating the country of their discoverers, are barren and uninhabited, and are not under the political jurisdiction of any nation.

The discovery of the South Pole succeeded that of the North Pole but a few months. The former was reached by Peary on April 6, 1909; the latter by Amundsen on December 16, 1911, and by Scott on January 17, 1912.

Antigua:—see British West Indies, p. 174.

Antipodes Islands:—see Kermadec Islands, p. 231.

Apia:—see German Samoa, p. 206.

Apolima:—see German Samoa, p. 206.

Arabia.—A peninsula, formerly a part of the Turkish Empire, comprising a number of separate states, of which Hejaz and Oman are the largest; Yemen will probably become a part of Hejaz. The great central area, Nejed, is desert. Latitude 34° 30′–12° 45′ north, longitude 32° 30′–60° east; area, approximately, 1,200,000 square miles; population, estimated, 8,500,000; capital, Mecca (1916), 80,000; other cities—Basra 80,000; Medina, 40,000; no official census. Arabia is the home of Semitic peoples, and from this area as a center they migrated to the four quarters of the earth. During the World War the various petty states declared themselves independent of Turkey, and certain of them organized the independent state of Hejaz. Their tribesmen were of the utmost service to the English forces, especially in Palestine.

The Arabian peninsula is surrounded on three sides by seas. It is an extensive desert area, interspersed with fertile lands along

the coasts and oases in the interior, where millet, cotton, coffee, indigo, barley, sugar, dates, tobacco and aromatic plants are raised. Some of the inhabitants dwell in towns and till the soil. For the greater part they are Bedouins, or wandering tribes, whose wealth consists of horses, camels, asses and mules, for which the country is noted. In all this vast country there is scarcely a stream deserving the title of river. Mecca, the birthplace of Mohammed, derives its support from the thousands of pilgrims who travel thither from every part of the Mohammedan world. A pilgrimage to Mecca is the duty of every faithful Mussulman. Many also visit Medina, his burial-place. It is on the slopes of Yemen, on the southwest coast, that the famous Mocha coffee is raised; but owing to primitive methods, the production has become very small. It is exported from Hodeda, a small port on the Red Sea. Only in the mountainous southwest has a fixed population established itself. The Semitic peoples of Arabia are divided into many tribes. Religion, Mohammedan. Foreign trade small. A railroad from Damascus to Mecca is completed to Medina. The Arabian peninsula is important to the rest of the world from the fact that it lies between two great trade routes—the Suez Canal, and the Bagdad route by way of the Tigris-Euphrates and Shat el Arab to India. This route, formerly held by the Germans, is now occupied by the British.

Argentina (Argentine Republic).—South America. Latitude 22°–55° south, longitude 73° 17′–53° 40′ west; area, 1,153,119 square miles; population (1915), 7,979,259; capital, Buenos Aires; population (1916), estimated, 1,598,600; other cities—Rosario (1915), 234,000; La Plata, 119,000; Tucuman, 66,000; Bahia Blanca, 75,000; Mendoza, 62,000. The region including Argentine Republic, commonly called Argentina, was discovered by Juan Solis in 1516. It was a Spanish possession up to 1816, when independence was declared. The present organization dates from 1853.

Argentina is the richest and most prosperous South American State. Climate chiefly temperate. A few years ago only a cattle-raising country, it has become the foremost agricultural state of South America. Most of the surface consists of prairie lands called pampas. It is the foremost wheat producing state of South America and one of the leading wheat-export regions of the world. The eastern part, together with the region between the Parana and

Uruguay rivers, are important farming lands. Maize and linseed are very large crops. Animal raising, chiefly cattle and sheep, is very extensive. The mineral resources near the Andes Mountains are still almost undeveloped. Manufacturing is small, but growing. The Parana, Paraguay and Uruguay Rivers are splendid highways of trade. Railroads, in all nearly 22,000 miles, penetrate the grain-growing plains. In the province of Buenos Aires these form a close network. The Transandine Railway connects Buenos Aires with Valparaiso, Chile. Races—Spanish-American, Italian, German, and Indian. Religion, Roman Catholic. The foreign trade consists mainly of grain, frozen meats and livestock sold in European markets; and the import of manufactured articles from Europe and the United States. Exports (1917), $688,212,560; imports, $475,080,394. Exports to United States (1916), $113,488,-657; imports from United States, $63,522,365.

Armenia.—A somewhat ill-defined region along the southern shore of the Black Sea, east of Anatolia (Asia Minor) and extending slightly into Russian Trans-Caucasia and into Persia. It originally formed part of the Armenian Kingdom. North of it lies the territory that declared its independence of Russia in 1918 as the Republic of Georgia. Roughly, it stretches from 41° 30′ to 37°30′ north, and from 37° to 48° east; area, about 162,000 square miles; population, estimated, at 7,800,000. Important towns are Erzerum, 80,000; Trebizond, 55,000; Bitlis, 40,000; Shusha, 43,000. It is likely to be recognized as a separate state, either of sovereign power or a mandatory under one of the Allied and Associated Powers. Topographically the region is a much dissected plateau, with some mountains, partly volcanic. Mount Ararat is one of the latter. This topography has had the effect of producing in the people a lack of cohesion. Important salt and fresh water lakes are found in the depressions. The plateau surface is forbidding, but the valleys are often wide and of fine agricultural character. Some of the mountain gorges are unsurpassed for scenery, and water-power is abundant. The mineral wealth of the country is very great, but little developed. The crops vary from hardy cereals and fruits on the higher land to rice in the lowlands. Vineyards flourish. Opportunity for stock-raising is very great. The country will respond splendidly to stimulation on the part of a high-minded nation; but the policy of

oppression and extermination pursued by the Turks has greatly depressed and impoverished the people, and has all but obliterated them.

Ascension Island:—see British Possessions; Africa, p. 162.

Ashanti:—see British West Africa, p. 173.

Asia.—The most extensive of the continental areas, and forming by far the larger portion of the vast Eur-Asian shield. It extends from 77° 40′ north, latitude to 1° 16′ north, and in longitude from 26° 3′ east, to 169° 40′ west. Its area, including islands, is estimated at 17,057,666 square miles. Its boundary with Europe is political rather than geographical, extending from the Arctic Ocean along or east of the Ural Mountains to the Caspian Sea, and through the Caucasus Mountains on the south. In this respect it differs from the other continents.

The topography of so great a continent must of necessity be most diverse, and the climate equally so. As a result many parts are relatively inaccessible, and large areas are desert. While the former may yield to improved transportation, most of the latter will never be redeemed. Certain portions of the continent, however, are of great importance to western peoples—notably India, Japan, and Siberia. The second of these is the only region that has, as a whole, adopted western methods and been developed in such ways and to such extent as to be comparable to western nations of high grade. The economic possibilities of all parts of the continent except the great deserts are enormous; and the western world has scarcely begun to realize how vast are Asia's resources of raw materials, or what markets can be developed for our manufactured goods.

Asir.—Formerly a district of Turkey, lying between Hejaz and Yemen, on the west coast of Arabia. Latitude 21°–17° 30′ north, longitude 40° 30′–45° east. Its indefinite eastern boundary extends along the desert border of Nejed. Its lowlands are hot and sterile; its interior is mountainous, with temperate climate and regular rainfall, and is fertile and populous. The people are warlike mountaineers, who have been virtually independent of Turkey, succeeding better than either Hejaz or Yemen. At present there seems no likelihood of their incorporation into either of these two countries. The people live for themselves, trading little with the rest of the world.

Auckland Islands:—see New Zealand, p. 244.

Australasia.—Practically the same as Oceania. It properly includes all the islands, large and small, extending from southeastern Asia half-way across the Pacific Ocean. Its most important divisions are:—Malaysia, including the Philippines; Australia, Tasmania and New Zealand; Melanesia, Micronesia, and Polynesia. All the islands and island groups are possessed by some foreign nation, and are described in the text for the most part under the possessions of that nation. With a few exceptions the islands are under British control.

Australia, Commonwealth of.—A self-governing commonwealth or Dominion of Great Britain. Latitude 11°–39° south, longitude 113°–153° east; area, 2,974,581; population (1917), estimated, 4,895,894; temporary capital, Melbourne, 695,640; other cities—Sydney, 764,600; Brisbane, 168,393; Adelaide, 223,718. Australia and Tasmania originally were convict colonies of Great Britain. Among its early explorers were Tasman, 1642, and Dampier, 1688. Its chief explorer was Captain Cook, 1769. The penal settlements were abolished early in the nineteenth century. The commonwealth as now organized was established 1901. The states are New South Wales, South Australia, Queensland, Western Australia, Victoria, Tasmania. The division known as Northern Territory, a part of South Australia, is practically unorganized. The Federal Territory, Yassa-Canberra, in New South Wales, not yet fully organized, has been made the site of the federal capital.

Australia is a typical continental land mass, compact in outline and with few bays on its coasts, with a high border and low interior, and with the highest mountains on the side of the greater ocean. The Murray, the only large river, is navigable a part of the year only. The eastern highlands receive enough rain for the production of grass and other foodstuffs. The west coast receives enough rain for wheat, fruit, and grass. Most of the interior is a desert region that is practically uninhabited except by gold miners. Fruit and vegetables, grown in Australian summer, reach British markets in European mid-winter. Fruits, including the vine, are successfully cultivated in many places. Frequent droughts impair the value of agriculture. Australia produces about half the wool the world consumes, practically all of which goes to Great Britain.

The yield of gold is very large, and coal and other minerals are extracted in large quantities. Railways total nearly 21,000 miles in length. The distance of Australia from European markets is a disadvantage to its commerce. The fact that its summer season occurs during the European winter makes its food products more valuable than they would otherwise be. Many steamship routes connect the chief Australian ports with the great trade centers of the world. Races, British and aboriginal. Three-fourths of the population are Protestant. Exports (1916–17), $490,000,000; imports (1916–17), $381,000,000.

Australia, Mandatories of.—In general, the Peace Conference awarded to Australia those lands nearest it and most directly affecting its future. These are three—the ex-German part of the island of New Guinea, Bismarck Archipelago, and the Solomon Islands.

Kaiser Wilhelm's Land (Island of New Guinea) occupies the northern and eastern part of the island. Latitude 2° 30′–8° south, longitude 141°–148° east; area, including attached islands, 70,000 square miles; population, variously estimated at 110,000–350,000. Became a German protectorate in 1884. Principal town, Madang, formerly called Friedrich Wilhelm's Haven. Harbors are few; the coastal lowlands are 60 to 100 miles wide, behind which high mountains rise. Cocoanuts are raised, and all tropical fruits grow wild. Mineral resources great, but totally undeveloped. Trade negligible.

Bismarck Archipelago is a large group of islands to the north and northeast of New Guinea. Latitude 0°–8° south, longitude 141°–154° east; area, estimated, 20,000 square miles; population, estimated, 180,000. A German protectorate was declared in 1884-85 over several groups of islands, which were renamed the Bismarck Archipelago. The former German names of many of the islands have been lately replaced by English names. Chief islands, New Britain (Neu Pommern), area, 10,000 square miles; and New Ireland (Neu Mecklenburg), 4,600 square miles. Smaller islands are Neu Hannover Island and the Duke of York (Neu Lauenburg) Islands. Besides the main group are—Admiralty Islands (chief island Taui or Manus, 600 square miles), St. Matthew Islands, Gardner Islands, Abgarris or Fead Islands, Nissan or Sir Charles Hardy Islands, French Islands, Rook Islands, Hermit Islands,

Ninigo Group, Anchorite Island and Commerson Island. Many of the islands are mountainous, with active volcanoes. Copra, cotton, coffee, rubber, pearls and shells are the products for export.

The German Solomon Islands are part of a group of volcanic peaks, not distinctly separated from Bismarck Archipelago. Latitude 5°–11° south, longitude 155°–163° east; area, estimated, 4,200 square miles; population, estimated, 45,000. The natives belong to the Melanesian part of the Black Race. Islands very mountainous; principal harbor, Kieta on Bougainville, and there are other good harbors. British planters and merchants export cocoanuts, pineapples, sweet potatoes, sandal wood and tortoise shell.

Austria.—A state of central Europe; a limited monarchy until 1918, when Hungary seceded and Austria became a republic. Of the great Dual Empire, little is left. Bohemia, Silesia, Galicia and Bukovina, Moravia, Hungary, Dalmatia, Bosnia and Herzegovina are gone entirely. The total area of Austria-Hungary in 1914 was 261,259 square miles; the loss of these divisions reduces it by 198,634 square miles. In 1915 the population was about 51,216,000; it has shrunk by 42,500,000 from the regions named above. Besides these, most of Lower Austria north of the Danube, and much of Tyrol, Carinthia, Carniola and Coastland are gone. The loss of area and population in these cannot be estimated at present.

What remains of Austria lies between 48° 30′ and 46° 30′ north, and between 9° 30′ and 17° east. The capital remains Vienna.

It is impossible to describe the resources of the country. The best of the arable land is gone, that remaining being chiefly in Lower Austria toward the Danube. Cattle raising, however, thrives in the Alpine sections. All the oil, and most of the coal and iron are found in the regions no longer Austrian. But coal, lignite, iron, copper, mercury, lead, zinc, sulphur, manganese, graphite and salt are all mined in the parts that are left. Race, almost entirely German; religion, chiefly Roman Catholic.

Azores:—see Portugal, p. 256.

Baker Island:—see U. S., Outlying Territories, p. 285.

Baker Islands:—see British Possessions; Australasia, p. 169.

Bahama Islands:—see British West Indies, p. 174.

Bahrein Islands:—see British Possessions; Asia, p. 165.

Balearic Islands:—see Spain, p. 268.
Bali:—see Dutch East Indies, p. 188.
Baluchistan:—see India, p. 219.
Banca:—see Dutch East Indies, p. 188.
Barbados:—see British West Indies, p. 174.
Basse-Terre Island:—see Guadeloupe, p. 213.
Basutoland:—see British South Africa, p. 173.
Bechuanaland:—see British South Africa, p. 173.

Belgian Congo.—A state of Central Africa. Latitude 5° north–12° south, longitude 12°–30° east; area (estimated), 910,000 square miles; population (estimated), 15,000,000, of whom less than 6,000 are Europeans, and the rest Bantus of the Black Race; capital, Boma; principal trading-stations, Matadi, Banana, Leopoldville, and Stanleyville. Explored by Dr. Livingstone and Henry M. Stanley, acting for the New York *Herald*. Founded as a state by Leopold II., King of the Belgians, 1882; made a state of Belgium, 1907.

The watershed of the Congo, next to that of the Amazon, is the largest in the world, and most of it is included in the Congo state. The surface is chiefly a high table-land, bordered on the west by mountains, through which the river has cut its way for 270 miles, dropping to the coast plain 1,800 feet in that distance. There is navigation up the lower Congo for 90 miles from its mouth; the rapids through the mountains are circumvented by railways in various places, above which about 8,000 miles of navigation are spread along the various branches of the upper Congo. The climate is torrid, and, excepting at some places, unhealthful for white races; but the heat is tempered by the elevation of the plateau, and as the whites have learned the conditions of health, the mortality among them has been reduced more than one-half. Great tropical forests are found in the east and northeast. Most of the state consists of rolling grass-lands, interspersed with areas of timber. A profusion of tropical plants and animals provides abundant food for the natives. The chief commercial products as yet are rubber, palm nuts, palm oil, and ivory; but some cotton and tobacco plantations are beginning to flourish. The wealth in rubber is enormous. European cattle have been introduced into regions where the tse-tse fly is not found. Gold, copper, silver and iron are the principal metals. Katanga, the

southeast district, has great mineral wealth. On the upper Congo and its tributaries are 100 small steamers and many tow-boats, which ply to the heads of navigation. Ocean steamships reach Moma and the lower river stations. Nearly 1,000 miles of railway are in operation. Many thousands of the younger natives are being taught trades, and all manual and considerable skilled labor is performed by natives under white supervision. In 1912, the year of greatest trade, exports totalled $28,500,000; imports, $22,150,000. The larger part of the export was crude rubber.

Belgian Possessions:—see Belgian Congo, p. 155.

Belgium.—A constitutional monarchy of northwestern Europe. Latitude 51° 30′–49° 30′ north, longitude 2° 30′–6° 20′ east; area (1914), 11,373 square miles; (1919), 11,775 square miles. The population, by the 1910 census, was 7,423,784; according to the normal increase, in 1919, it should be 8,092,924; the actual number is not known. The ex-German territories awarded to Belgium by the Treaty of 1919 add an estimated population of 119,184. Capital, Brussels (1912), 663,647 with suburbs; other cities—Antwerp, the chief port, 312,884; Liège, Ghent, Bruges, Verviers, Louvain and Ostend. Owing to the World War the population of these cities in 1919 is unknown. In Cæsar's time the region was inhabited in part by the Belgae. From 1579, for more than two centuries, Belgium was a battle ground between Dutch and Spanish contestants for the territory. In 1815 it was united to Holland, although practically a separate state. In 1830 it became an independent kingdom. In 1914 it was overrun by Germans, and the greater part of it was held by them for four and a quarter years. The Treaty of Versailles, 1919, added to Belgium neutral Moresnet, the Kreis of Eupen, and the Kreis of Malmedy, extending its boundary somewhat eastward between the Netherlands frontier and Luxemburg, so that there may never again occur the concentration of troops at the gateway to Belgium that took place in July, 1914.

The country is normally one of the most densely peopled in the world. Every part of the land is cultivated to the highest degree, and it is a large producer of beet sugar. Nevertheless, although farming is very intensive, it cannot produce enough grain for home consumption. The Ardennes upland is rich in coal, iron,

zinc, lead and copper. Coal measures underlie a considerable part of the area, but are so deep that coal mining is becoming difficult.

Belgium is a great manufacturing country. Normally, more than 1,000,000 persons are engaged in manufactures; metal and machinery industries take the first rank, while textiles, glass, porcelain and other branches are very important. The railroad and canal systems are highly developed; but sea communications are hampered by the small extent of coast line, its shallow waters, and the poor quality of its harbors. More than one-half of the people are Flemish, 42 per cent. French, and the rest Walloons. Religion, dominantly Roman Catholic. Principal imports, wool, wheat, cotton, hides, coal, seeds, rubber; exports, wool, iron and steel, flax and its yarns, glass. Export trade chiefly to Germany, France, Great Britain, Netherlands, United States; import trade from France, Germany, Great Britain, United States, Netherlands. Exports (1913), $715,365,000; imports, $916,725,000.

Belgium, Mandatory of.—Belgium has become the mandatary for a portion of ex-German East Africa, adjacent to Belgian Congo, included in the Ruanda district at the northwestern corner of the region, and the Urundi district to the south, lying at the northern end of Lake Tanganyika. This country will become practically an integral part of the Belgian Congo. For a description of the region of which it is a part, see German East Africa.

Bermudas:—see British Possessions; America, p. 164.

Bhutan.—A state in the eastern Himalayas. Latitude 28°–26° 45′ north, longitude 89°–92° east; area, about 20,000 square miles; population (estimated), 250,000. The natives were conquered two centuries ago by Tibetans. In 1774 the East India Company concluded a treaty with the country; but outrages by the inhabitants have led to British control, consummated in 1910, operative through India. Religion, a loose form of Buddhism. Chief products, rice, maize, millet, wax, poor cloth, musk, ponies and silk. A beginning has been made by the local government in the encouragement of foreign trade, and of foreign capital in mining and lumbering. The maximum of trade with India was reached in 1914–15, when exports amounted to $725,000, and imports to $585,000.

Billiton:—see Dutch East Indies, p. 188.

Bismarck Archipelago (German New Guinea):—see Australia, Mandatories of, p. 153.

Bokhara:—see Russian Possessions, p. 263.

Bolivia.—A republic of South America. Latitude 10°–16° south, longitude 70°–55° west; area, 514,155 square miles; population (1915), estimated, 2,900,000; seat of government, La Paz (1916), estimated, 100,000; other cities—Cochabamba, 31,000; Potosi, estimated, 30,000; Sucre, constitutional capital, estimated, 30,000. The state was named after Simon Bolivar, who led in the revolt from Spain. The war for independence lasted from 1809 to 1825. A war between Bolivia and Chile ended in the loss of the coast provinces, Tacna, Tarapaca and Antofagasta. These had not been restored in 1919. The agricultural products are fruit, corn and vegetables common to both temperate and tropical countries. The tropical forests are rich in cabinet, dye and building woods. India-rubber of first-class quality is found in enormous quantities, and the country is second in rubber exports. Gold, silver, antimony, copper and tin are extensively mined, Bolivia being next to the Malay region in tin production. The llama is the beast of burden employed for pack-trains. It is the original of the species from which the camel of the Asian continent is descended. Among the important products is coca, a plant that yields the drug cocaine. In this country is partly situated Lake Titicaca, on whose historic shores stand the ruins of structures built by the once mighty race of Incas. The population consists of Spanish (white), Mestizos (mixed white and Indian), and full-blooded Indians. The last named constitute about one-third the population. Religion, Roman Catholic. The foreign trade of Bolivia is carried on through the Chilean port of Antofagasta, with which the mining region is connected by rail. Much of the rubber and other forest products reach their markets either by way of the Parana River to Buenos Aires, or by the Madeira River to Amazon ports. The proposed Pan-American Railway will utilize about 400 miles of Bolivian railway. The imports are provisions, hardware, liquor, cloth goods, clothes; the exports are chiefly silver, tin and rubber. Exports (1916–17), $39,500,000; imports, $12,140,000.

Bonin Islands:—see Japanese Possessions, p. 227.

Borneo:—see Dutch East Indies, p. 188.

Bounty Islands:—see Kermadec Islands, p. 231.

Bourbon Island:—see Réunion Island, p. 259.

Brazil.—A republic of South America. Latitude 5°–32° south, longitude 35°–74° west; area, 3,219,000 square miles; population (1912), 24,618,429; capital, Rio Janeiro (1911), estimated, 1,129,000; other cities—São Paulo (1911), estimated, 450,000; Bahia, 290,000; Para, 200,000; Pernambuco, 150,000; Manaos, 50,000. Brazil became a Portuguese colony in 1500; in 1813, a kingdom; in 1822, an empire; and in 1899 a republic.

Brazil is the largest of the South American countries, being a little larger than the United States proper. It comprises nearly one-half of the area of South America. It surpasses all other countries in the extent of its navigable rivers. It has also immense forests and mines of great value, but not much has been done to develop its resources. The lowlands of the Amazon Basin are covered with dense tropical forests. The highlands inland, south of the Amazon Basin, are dry, steppe-like and sparsely populated. The region of the plantations is in the coast zone, which is fairly well tilled, and contains most of the important cities. The climate is tropical in the north, subtropical in the middle latitudes and temperate in the south. Brazil is the largest producer of coffee and rubber in the world. Para is the port of shipment of Amazon rubber; Santos for the coffee marketed as "Rio." The Amazon Basin abounds in rubber trees. Sugar cane is the great crop of the regions tributary to Pernambuco and Bahia. Cattle thrive chiefly among the farmers of the south. Mining is little developed. Manufactures are confined chiefly to the meat, sugar and brewing industries. Steamships for New York and British ports call at the various coast ports. They also ascend the Amazon to Manaos and Iquitos, Peru, the principal ports for the collection of rubber. The railways are chiefly in the southeastern part, converging at Rio and São Paulo. The population is mainly Portuguese, but it includes a large proportion of Americans, Italians and native Indians. Religion, Roman Catholic; language, Portuguese. The exports are chiefly coffee, rubber, tobacco, hides and cacao; imports, foodstuffs, coal, machinery and textiles. Exports (1917), $299,375,000; imports, $222,550,000.

British Borneo:—see British Possessions; Asia, p. 165.

British Central Africa:—see Nyassaland Protectorate, p. 248.

British East Africa.—Consists of a large area on the mainland of Africa, in three protectorates:—East Africa, Uganda, and Zanzibar.

The East African Protectorate extends from about 4° 30′ north latitude to 5° south; and in longitude from 34° to 43° east; area, 246,822 square miles; population (estimated), 4,038,000. Mombassa is the largest town; population, about 30,000; capital, Nairobi, 14,000. The country was first made known to Europeans by German missionaries about the middle of the last century. Through British interests in Zanzibar, English companies gained concessions between 1884 and 1888. In 1887 the territory was formally recognized as within the British "sphere of influence," and in 1895 the administration was vested definitely in the British crown.

The products of the country are chiefly agricultural—rice, maize, cassava, cocoanuts, sisal hemp, rubber, cotton; in the highlands, a wide variety of temperate crops. Wheat occupies a large acreage, maize for export is beginning to thrive, and coffee plantations abound. Timber, largely of temperate woods, is abundant. The chief imports are cotton cloth, grain and flour, provisions, sugar, building materials, vehicles, machinery, tobacco, liquor, soap, hardware, etc. Exports are chiefly cotton, hides and skins, fibers, coffee, ivory, grain and oil seeds. It is difficult to separate trade figures from those of German East Africa and Congo; but in 1916–17 the exports of these three were $7,209,385; imports, $15,120,615.

Uganda Protectorate adjoins the last on the west, occupying from 5° north latitude to the equator, and from 30° to 37° east longitude; area, 109,119 square miles; population, 2,954,861. Parts of the country are greatly affected by sleeping sickness. The British capital is Entebbe, the native capital Mengo. The products are chiefly cotton, coffee, chillies, ghee, plantation rubber, ivory. Trade is chiefly with Great Britain, United States, and India. Imports are yarns and textiles, provisions, cotton blankets, bags and sacks, soap. Exports (1916–17), $5,384,620; imports, $6,480,500.

The Zanzibar Protectorate is an island sultanate, including also Pemba Island, off the east coast of Africa. Area of Zanzibar, 640 square miles; of Pemba, 380 square miles; population of

Zanzibar, 114,000, of Pemba, 83,000; chief town and port, Zanzibar, a city of 35,000, in which a large part of the population is centered. The islands were made a British protectorate in 1890; in 1914 they were declared a British colony and were transferred from the foreign to the colonial office. Zanzibar is an entrepôt for the collection of commodities destined for shipment from the neighboring islands and coast regions to foreign countries and for the local distribution of foreign imports. Races, chiefly Negroes, Arabs, and Jews. Cloves, copra and ivory are the chief products. Imports are piece goods, rice, groceries and provisions, sugar, copra, grain. Exports (1916), $5,260,835; imports, $6,499,100.

British Guiana:—see British Possessions; America, p. 164.

British Honduras.—In northeast Central America, adjoining Mexico. Latitude 18°–16° north, longitude 89°–88° west; area, 8,598 square miles; population (1917), estimated, 42,400; capital and chief business center, Belize. Settled in 1638 by logwood cutters who had been sea rovers of unsavory reputation. After various attacks by the Spanish, which were repelled, treaties with Spain, Mexico, and Guatemala made the territory a British crown colony. The country consists chiefly of primeval forests, with savannas and open sandy plains covered with a wiry grass and dotted with pine trees. The soil is exceedingly rich, and sugar-cane is the chief crop. The best of cacao trees grow wild in the bush. Staple products are natural woods, mahogany, logwood, and many excellent cabinet woods. The cutting and shipment of these have been the chief industry for more than two centuries. These have been the chief exports, and they have gone almost wholly to Great Britain. Another important export is chicle (gum). The imports are mainly cotton goods, foodstuffs, and machinery from Great Britain. There are some thriving sugar estates, and large coffee plantations have been started. Fruits are rapidly and extensively grown. Exports (1913–14), $3,213,000; imports, $3,273,800; later years show lower figures.

British North Borneo:—see British Borneo, p. 159.

British Possessions.—The dependencies and colonial possessions of Great Britain include about one-third of North America and Africa, a large area in southern Asia, all of Australia, and many groups of islands scattered throughout the world. The

vast scale of their area, population and trade may be seen from the following table, compiled for the fiscal year 1916–17:—

Continent	Area Square Miles	Population	Exports	Imports
Africa	3,487,725	53,816,000	$487,920,000	$504,750,000
America	4,010,216	10,833,000	1,517,685,000	993,365,000
Asia	1,972,306	324,374,000	1,410,575,000	1,139,880,000
Australia and Australasia	3,192,755	6,567,000	669,475,000	519,800,000
Europe	120	240,000	2,955,000	16,690,000
Total	12,663,122	395,830,000	$4,088,610,000	$3,174,485,000

Of the British dependencies, the major ones and their subdivisions are described separately, in proper alphetical order. The following descriptions apply to minor possessions.

Africa.—Ascension Island is a small volcanic peak southwest of Africa and 700 miles northwest of St. Helena. Latitude 8° south, longitude 14° 20′ west; area, 34 square miles; population (1914), 196; a naval station and sanatorium. It is a breeding place for sea turtles, in the eggs and meat of which there is a small commerce.

Mauritius (Isle of France) is an island in the Indian Ocean, about 500 miles east of Madagascar; once a French possession, but a British colony since 1814; area, about 720 square miles; population (1917), 384,253; capital, Port Louis, estimated, 50,000. The population consists mainly of Hindus, but there are many of Malay and African descent. The people of European descent are French and English. Sugar and hemp are the exports. Railways connect the various centers of population. Steamship lines connect the island with British ports. Exports (1916), $29,770,015; imports, $17,988,970.

There are several administrative dependencies. The Chagos Islands, latitude 6°–7° 30′ south, longitude 71°–72° 30′ east; largest island, Diego Garcia, with 517 inhabitants (1911); population, Negroes from Mauritius; cocoanut oil exported. Rodrigues Island, 20° south, 63° 30′ east; area, 40 square miles; population

(1911), 4,829. Exports (1916), $106,300; imports, $57,330. St. Brandon (Cargados) Islands, 16° 32′ south, 59° 37′ east, chiefly barren sand banks; Trois Frères (Eagle) Islands, about which little is known.

Nyassaland Protectorate (formerly British Central Africa). Latitude 9° 30′–17° south, longitude 33°–36° east; lies west and south of Lake Nyassa; area, 39,573 square miles; population (1916), 1,141,122, mostly natives; seat of government Zomba. Products are coffee, tobacco, cotton, tea; cattle abundant. Imports, textiles, hardware and provisions; exports, coffee, cotton, bees' wax, rubber, ground nuts. Exports to Great Britain (1916–17), $1,431,675; imports, $1,429,470.

St. Helena is a volcanic island in the South Atlantic, about 1,700 miles northwest of Cape Town. Latitude 16° south, longitude 5° 45′ west; area, 47 square miles; population (1914), 3,553. The island was a Portuguese possession from the time of its discovery in 1502, a Dutch possession from 1645 to 1651, and a British East India Company holding for nearly two hundred years, during which time the plantations were cultivated by Negro slaves. In 1815 it was the place of exile of Napoleon Bonaparte, who died six years later. In 1836 slavery had become past history, and about that time the island became a Crown Colony. St. Helena is a British coaling station and military post. Potatoes and other vegetables are sold to passing vessels, the trade being considerable. New Zealand flax and tow are the chief exports. Lace and flax fabrics are manufactured. Exports (1916), $123,180; imports, $232,570.

The Tristan da Cunha Islands are a small group in the South Atlantic, midway between South America and the Cape of Good Hope. Latitude 37° 6′ south, longitude 12° west; area a few square miles; population (1917), 105, chiefly shipwrecked sailors and their families. There is little industry, and no trade.

Seychelles Islands; an archipelago of 90 islets in the Pacific. Latitude 4°–6° 30′ south, longitude 53°–56° east; area, estimated, 156 square miles; population (1917), estimated, 24,000; seat of administration, Victoria, a coaling station of the British navy; chief island, Mahé (55.5 square miles). The islands were discovered in 1502, and formally annexed as a British possession in 1744. They were not inhabited when annexed. The present popu-

lation consists of East Indians, Chinese and Negroes. The English contingent is small. Copra, vanilla, soap, guano, and cultivated rubber are the chief exports, and these are cleared mainly through Mauritius. Imports, foodstuffs, clothing, liquors. Exports (1916), $557,415; imports, $495,475.

British Somaliland Protectorate. Latitude 11° 30′–8° north; longitude 42° 30′–49° 30′ east, lying along the south side of the Gulf of Aden; area, about 68,000 square miles; population, 300,000 nomads; chief town, Berbera, 30,000 (1911). Imports, chiefly rice, textiles, sugar, dates; exports, hides, gum and resin, cattle. Exports (1916–17), $1,100,205; imports, $1,509,955.

America.—The Bermudas comprise a colony of 360 small islands, of which only about 20 are inhabited, 580 miles east of North Carolina. Latitude 62° 30′–62° 10′ north, longitude 65°–64° 30′ west; total area, only 19.3 square miles; population (1917), 20,215; chief town, Hamilton (2,627). An important naval base; exports, onions, potatoes, flowers; imports, food, cutlery, coal, clothing, leather goods, draught animals. Trade almost entirely with United States. Exports (1916), $699,075; imports, $3,673,995.

Falkland Islands; a group of continental islands off the east coast of South America, 300 miles east of Magellan Straits. Latitude 52° south, longitude 60° west. They are a Crown Colony of Great Britain, to which are attached also South Georgia, the South Orkney, South Shetland, Sandwich Islands and Graham's Land; area, estimated, 6,500 square miles; population, estimated, 3,500; seat of government, Stanley, 950. South Georgia Islands are a whaling settlement. Latitude 54°–55° south, longitude 46°–42° west; area, 1,000 square miles.

The Falklands consist of West Falkland (2,300 square miles), East Falkland (3,000 square miles), and about 125 small islands totalling 1,000 square miles. Cattle and sheep farming are the only industries, and the value of exports per capita is very high. The islands are of strategic importance. Imports, groceries, timber, coal, clothing, hardware; exports, whale products, wool, tallow, hides. Exports (1916), $10,268,595; imports, $2,955,085.

British Guiana is a colony. Latitude 8° 20′–1° 15′ north, longitude 61° 30′–56° 40′ west; area, 89,480 square miles; population, estimated (1916–17), 314,000; capital, Georgetown, 54,723. The

low coastal plain, hot and fertile, is covered with plantations, cultivation being confined chiefly to this narrow zone, where most of the people live. Farther inland the country becomes hilly and mountainous, with wide forest areas and valuable gold mines. The short Demerara railroad, the first to be built in South America, was constructed to meet the needs of the sugar industry, which, with rum and molasses, was long the great industry of the country. Cheap sugar has so seriously injured the industry that many planters have abandoned sugar for the cultivation of tobacco and rice. Gold, rubber, sugar and rice are sent to Great Britain and the United States; the imports consisting of foodstuffs and general manufactures. Races, East Indian coolies, Negroes, Chinese and Indians. Exports (1916), $18,790,330; imports, $12,359,720.

Asia:—Aden is a volcanic peninsula on the southern tip of the Arabian coast. Latitude 12° 40′ north, longitude 45° east; area, 75 square miles, or with the Protectorate behind, 9,000 square miles; population (1911), 46,165. An important coaling station, and strategically of the utmost importance. Chief industries of Aden proper are salt and cigarette making; trade largely transit. Imports, cotton and cloth, grain, hides, coffee, sugar, tobacco, fruits, vegetables and provisions, coal; exports, coffee, gum, hides, cotton goods, tobacco, grains, sugar, provisions. Exports (1916), $23,125,305; imports, $27,136,130.

Perim, attached to Aden, is an island at the narrow entrance to the Red Sea, and commanding its water; area, 5 square miles.

Kuria Muria Islands. Latitude 17° 30′ north, longitude 55° 30′–56° 30′ east, off the southeast coast of Arabia. Islands are five in number, secured by England for a landing place for the Red Sea cable; they are attached to Aden.

Sokotra Island. Latitude 12° 30′ north, longitude 54° east; 130 miles southeast of the Arabian coast and on a direct line from Suez to India; area, 1,382 square miles; population, about 12,000, mostly farmers and fishers. Formerly Turkish, became British in 1876 by treaty, as a way-station of the Suez-India route. Products, dates, gum, sheep and cattle; butter, the latter exported. It is attached to Aden for administration.

The Bahrein Islands, eight in number, lie in the Persian Gulf.

Latitude 26° north, longitude 50° 30′ east; Bahrein, the largest, 10 by 27 miles; population of group, 103,000. Harbor facilities excellent. Industry chiefly pearl fishing; dates and white donkeys are other products; sail cloth and reed mats manufactured. Imports, pearls, rice, coffee, sugar, tea, cloth; exports, pearls, rice, coffee, tea, sugar, dates. As would be indicated by these lists the trade is mainly transit.

British Borneo occupies the northern coast of Borneo, and some small islands adjoining on the north. Latitude 7° 30′–0° 40′ north, longitude 109° 45′–119° 30′ east. British North Borneo, obtained in 1881, occupies the northeastern end; area, about 31,106 square miles; population (1911), 208,183, largely aboriginal tribes. Interior wild and mountainous; trade chiefly through Singapore and Hong Kong with Great Britain and the colonies. Products varied and tropical—timber, copra, gum, rubber, camphor, spices, rattan, vegetables and tobacco. Exports, all these, and birds nests; timber is the greatest natural resource. Exports (1916), $5,070,710; imports, $1,049,665.

Brunei lies southwest of the territory just described; area, about 4,000 square miles; population, estimated, 30,000. Imports, chiefly rice, tobacco, cloth; exports, coal, rubber, sago, cutch. Exports (1916), over $425,000; imports, over $150,000.

Sarawak occupies the southwest part of British Borneo; area, about 42,000 square miles; population, estimated, 500,000. Became British in 1842. Coal and other minerals abundant; oil is being developed. Trade mainly with Singapore. Exports, sago, flour, pepper, gold, petroleum, plantation rubber. Exports (1916), $5,666,785; imports, $4,087,680.

Ceylon is an island colony southeast of the southern tip of India and about 30 miles from the mainland. A narrow ridge known as Adam's Bridge, spans all but about 12 miles of the distance between the island and the mainland. Latitude 9° 30′–6° north, longitude 79° 30′–81° 45′ east; area, 25,332 square miles; population (1917), estimated, 4,547,200; capital, Colombo, 211,274 (1911); chief port, Galle, 39,960; other cities—Jaffna, 40,441; Kandy, 29,451. Authentic history of Ceylon begins with the Hindu invasion of the fifth century, B.C. Portuguese merchants established settlements in 1505, which were taken from them by the Dutch. In 1801 Ceylon was made a British possession; in

1815 it became an organized colony; in 1833 a constitution was framed. About one-eighth of the land is under cultivation. The crop of rice and other grains is used for home consumption. The export crops and products are coir, cacao, coffee, cinnamon, tea and rubber, the two last named being the most valuable. Imports are cotton goods, rice, coal and coke, liquor, sugar, manure. The graphite of Ceylon is of fine quality and is much used in manufactures; over 950 mines are in operation. Monazite and gems are mined. Railways connect the important industrial centers with Colombo and Galle. The Singhalese form the greater part of the population, but there are many Malays and a few Veddahs, or aboriginal peoples. Exports (1916), $99,180,385; imports, $73,343,630.

The Maldive Islands, a dependency of Ceylon, are a group of 13 coral islands, chiefly atolls, southwest of the southern tip of India. Latitude 7° 6′–0° 42′ north, longitude 71°–74° east; population, estimated, 70,000, all Mohammedans. The people are of superior civilization and skillful as navigators and traders. Coir, cocoanuts, copra and tortoise shell are exported. No trade statistics.

Cyprus is the third largest island in the Mediterranean Sea, 40 miles south of Asia Minor and 60 miles west of Syria. Latitude 35° 40′–33° 30′ north, longitude 32° 20′–34° 35′ east; area, 3,584 square miles; population (1917), estimated, 298,775; capital, Nicosia, estimated, 16,000. There are no good harbors. The history of Cyprus extends back probably 3,000 years before the Christian era. More than once Egypt made a conquest of the island in order to obtain its treasure of copper mines. It was also a possession successively of Greece, Persia, Phœnicia and Turkey. The anglicized word copper is derived from the Greek form of Cyprus. The island came under the control of Great Britain in 1878, and was formally annexed in 1914. The mineral wealth of Cyprus consists of copper, salt, gypsum and marble. The chief interests are agricultural—wine, fruits, grain, barley, silk, olives, cotton, cattle, wool, hides. There are no railways. Chief imports, sugar, raw coffee, wheat and flour, olive oil, rice, tobacco, petroleum, cotton and cotton goods, woolen goods, clothing, leather and its goods, soap; exports, animals, carobs, wine, raisins, cotton, silk cocoons, wool, hides, pomegranates, citrous fruits. The

population consists mainly of Greeks and Turks. Exports (1916), $3,542,230; imports, $4,838,900.

Hong Kong, an island colony, situated at the mouth of Canton River in China. Latitude 22° 5′ north, longitude 114° 10′ east; area, 32 square miles; population (1911), 366,145; ceded to Great Britain in 1841; the great center of British trade with China and Japan, and strategically important as well. In 1898, Great Britain leased for 99 years a mainland area of 356 square miles, population, 96,500 (1916), called the New Territories; in addition, Old Kowloon has 3 square miles area. Hong Kong is a free port; trade mainly with Great Britain (one-half the total), India, Australia and United States. The variety of trade is great:—among the exports, preserved ginger, silks, drugs, feathers and down, tin; imports, cottons, woolens, iron and steel manufactures, machinery, tobacco. No trade statistics, but the volume is great.

The Straits Settlements are a Crown Colony of 1,000 square miles, composed of Singapore, Penang, the Dindings, Malacca and Labuan; and Christmas Island and the Cocos Islands. The four first named are located on the west side of the southern part of the Malay Peninsula. Singapore is an island at the tip of the peninsula. Latitude 1° 15′ north, longitude 103° 15′ east; area, 217 square miles, and attached to its administration are a number of adjacent small islands. Penang is an island, the northernmost of the areas. Latitude 4° 25′ north, longitude 100° 20′ east; area 108 square miles; on the adjacent shore is Wellesley Province, a narrow strip of 280 square miles area, forming part of Penang; chief town of Penang is Georgetown, on the island. The Dindings is an area on the coast of Perak, a strip of mainland together with the island of Pangkor. Latitude 4° 20′ north, longitude 100° 40′ east. Malacca lies between the Dindings and Singapore, a strip of mainland 42 miles long and 8 to 24 broad. Latitude 2° 12′ north, longitude 102° 15′ east. Population of the whole colony (1917), including Christmas, Cocos-Keeling and Labuan Islands, 812,793. The ports are all free, and the trade chiefly transit. Exports, mainly tin, spices, sago and tapioca, hides and horns, rattan, rubber, gum, copra. Exports (1916), $287,181,820; imports, $316,210,370.

The Cocos or Keeling Islands are a group of a score of small coral islets. Latitude 12° 6′ south, longitude 96° 55′ east; popu-

lation (1916), estimated, 807. Christmas Island, latitude 10° 31′ south, longitude 105° 33′ east; area, about 80 square miles; population (1916), 1,909. Probably never inhabited before its occupation by whites in 1897. Phosphate of lime is the only resource. Exports (1916), $565,265; imports, chiefly machinery, tools and traction plant, $175,600. Labuan Island lies close to the northwest coast of British Borneo. Latitude 5° 17′ north, longitude 115° 15′ west; area, 28.5 square miles; population (1916), estimated, 6,862, chiefly Malays and Chinese traders.

The Federated Malay States are four, occupying a large part of the Malay Peninsula. Latitude 6°–1° 40′ north, longitude 100° 30′–104° 20′ east; area, 27,506 square miles; population (1911), 1,037,000. Chief products, cocoanuts, rice, rubber, sugar, spices, tapioca. Rubber is cultivated, and tin extensively mined, much of the world's supply of the latter being obtained here. The country is rich in other minerals. Imports, chiefly rice, opium, tobacco, cotton goods, sugar, condensed milk, animals, liquor, petroleum and benzine, iron wares, machinery; exports, tin and tin ore, rubber, copra, rice, tapioca, coffee. Exports (1916), $128,300,485; imports, $40,512,340.

The Unfederated Malay States are five, lying largely at the north of the Federated States, on the border of Siam. Their total area is about 23,400 square miles; population, estimated, 970,000. The industries and trade are practically those of the other states. Exports (1916), $26,470,000; imports, $8,655,000.

Weihaiwei is in the Province of Shantung, China; and with adjacent water was leased by Great Britain in 1898. The territory includes a number of islands and a zone ten miles broad around the bay. Latitude 37° 30′ north, longitude 122° 30′ east; area, 285 square miles; population (1911), 147,177. The place is a naval base of great strategic importance. The country is agricultural and prosperous. Cereals and temperate latitude fruits are cultivated; and silk, the worms being fed on oak leaves. Imports, chiefly kerosene, flour, sugar, liquor, provisions, coal; exports, ground-nuts, seeds and oil and salt fish. The port is free.

Australasia:—In the Australasia-Oceania region of the Pacific Ocean, Great Britain, possesses a large number of islands and island groups, widely scattered in latitude and longitude.

The Territory of Papua (British New Guinea) includes the

southeastern part of New Guinea, the D'Entrecasteaux and Louisiade Islands, and all those islands between 8°–12° south latitude and 141°–155° east longitude; total area; 90,540 square miles (Papua proper, 87,786); population (1917), estimated, 201,374, of which 1,036 were Europeans. Latitude of Papua proper 5°–9° 15′ south, longitude 140° 50′–151° east. New Guinea became British in 1887. Timber is abundant, and the planting of cocoanut palms extensive. Minerals form a large asset, gold mining being an important occupation; copper also is exported. Petroleum underlies at least 1,000 square miles. Trade chiefly with Queensland and New South Wales; chief ports, Port Moresby, Samarai, Daru. Imports, foodstuffs, tobacco, hardware; exports, copra, sisal hemp, pearl shell and pearls, gold, sandal wood, copper ore, timber, rubber. Exports (1916–17), $782,675; imports, $1,358,200.

The Louisiade Archipelago extends southeastward from New Guinea, numbering over 80 islands, with many coral reefs between. Latitude 12° south, longitude 152°–154° east. Gold occurs on at least two of the largest islands; tropical forests abundant. The D'Entrecasteaux Islands are a group of volcanic peaks north of the southeastern tip of Papua, and north-northwest of the Louisiades. Latitude 9°–10° south, longitude 150°–152° east.

Fiji is an island colony, comprising over 200 islands, 80 inhabited. Latitude 12°–20° south, longitude 177° east–178° west; area Viti Levu, 4,053 square miles; Vanua Levu, 2,130 square miles; total area, 7,435 square miles; population (1917), estimated, 163,565, of whom not more than 4,000 were Europeans; capital, Suva, on Viti Levu; European population, 1,376. Discovered by Abel Tasman, 1643; visited by Cook, 1773; surveyed by a United States exploring expedition, 1840; ceded to Great Britain by chiefs and people, 1874; island of Rotumah added, 1880. Cultivation of sugar cane and tropical fruits, and manufacture of sugar and copra, are the principal industries. Practically all the trade is carried on with British ports. Exports, sugar, fruit and copra; imports, textiles, foodstuffs, oils, machinery and domestic wares. Regular steamships connect Suva and Levuka with New Zealand, Australia and Honolulu. Exports (1916), $11,270,215; imports, $4,392,500.

Tonga (Friendly) Islands form an archipelago of about 150 volcanic islands in the South Pacific in three groups. Latitude 15°–23° 30′ south, longitude 173°–177° west; area, 250 square miles; population, estimated, including 380 Europeans, 23,000. The islands are a native kingdom, and became a protectorate of Great Britain in 1899. A British commission exercises civil and criminal authority over subjects of foreign powers. The chief exports are copra, bananas, oranges, fungus and live stock. They clear from the port of Tonga to Auckland. Imports are cloth, foodstuffs, tinware. Exports (1916), $162,600; imports, $242,140.

Many Pacific islands are attached to New South Wales or New Zealand; the following are unattached:

Ducie Island. Latitude 24° 40′ south, longitude 124° 48′ west. Pitcairn Island. Latitude 25° 5′ south, longitude 130° 5′ west; off the end of the Paumotu Archipelago; area 2 square miles; population (1914), 140. The island is of social interest from the fact that it was settled by mutineers from the British ship *Bounty*, in 1790. The island was twice abandoned but again repatriated. It is self-supporting. Sugar, coffee and garden products are exported.

Dudoza Island, 7° 40′ south, 161° west; area, 2 square miles. Victoria Island; about 7° south, 161° west; area, 2 square miles; uninhabited. Phœnix Islands; 2° 30′–4° 30′ south, 171°–174° 30′ west; eight islands; area, 16 square miles; population, 59; Howland Island, 1° north, 176° west, is an outlying member, valuable for strategic purposes.

Gilbert and Ellice Island Colony; protectorates from 1892 and annexed as a colony in 1915. There are four groups:—(1) Union, or Tokelau Group, 8° 30′–11° south, 171°–172° west; five clusters of islets; area 7 square miles; population (1911), 914; (2) Ellice Islands, 5° 30′–11° 20′ south; 176°–180° east; nine principal and other smaller islands, Funafuti being the best known; area, 14 square miles; population (1911), 3,093; (3) Fanning Island, 3° 50′ north, 150° west; area, 15 square miles; population, 150; and Washington Island, 4° 40′ north, 160° 20′ west; area, 6 square miles; and Ocean Island; (4) Gilbert Islands, crossed by the equator; longitude 170°–180° east; area, estimated, 166 square miles; population, estimated, 30,000. The chief islands are 17 in number; they were discovered in 1765; the natives are warlike

Polynesians. Principal crops, cocoanuts and pandanus fruit. Exports (1915–16), $916,240, chiefly phosphates and copra; imports, $543,915.

The British Solomon Islands, about 8° south and 160° west, include 15 major islands and several groups of lesser ones—Low Howe, Santa Cruz and Duff or Wilson Groups, and some single islets; area, about 13,000 square miles; population (1915), estimated, 150,660. Crops are cocoanuts, rubber, sweet potatoes, pineapples, bananas. Imports, foodstuffs, boats, canned meats, timber, clothing, hardware, tobacco; exports, copra, shells, mother of pearl. Exports (1914–15), $437,695; imports, $665,310.

Starbuck Island, 5° 30′ south, 155° west; area, 1 square mile; uninhabited. Malden Island, 4° south, 155° west; area, 35 square miles; population, 168. Jarvis Island, 0° latitude, 159° west longitude; area, 1.5 square miles; population, 30. Palmyra Island, 6° north, 162° 30′ west; area, 1.5 square miles. Baker Islands, on the equator. These are mainly coral; cocoanuts and guano are their products.

The New Hebrides Islands are under joint British and French administration, and are described under French Possessions.

Europe.—Gibraltar. Latitude 36° 6′ north, longitude 5° 21′ west, in the Province of Andalusia, Spain. The famous Rock of Gibraltar is a Crown Colony; area, 1.875 square miles; population, including port and harbor (1917 estimate), 16,499, excluding military and naval forces. People are chiefly descendants of Spanish and Italian settlers. A naval base of great strategic importance, completely commanding the entrance to the Mediterranean Sea. Industries unimportant; trade chiefly transit, and bunker coal.

The Island of Malta was annexed in 1814, and is one of the most important ports of call in the world, besides being an important naval base. It is the largest of the Maltese Islands. Latitude 36° north, longitude 14° 30′ east; area, 91.5 square miles, or with two small adjacent islands, 118 square miles; population (1917), estimated, 223,741; chief town and port, Valletta. Principal products, potatoes, citrous fruits, onions, corn, cotton. Manufactures, cotton, filigree. The chief industry is farming, and many cattle are kept. Fishing is important. Transit trade prohibited. Imports, wheat, flour, cattle, butter and margarines,

cheese, fish, fruits, liquor, meat, sugar, cotton goods, petroleum. Exports (1916–17), $2,955,515; imports, $16,692,460.

British Solomon Islands:—see British Possessions; Australasia, p. 169.

British Somaliland:—see British Possessions; Africa, p. 162.

British South Africa.—Consists of Basutoland, Bechuanaland Protectorate, and Rhodesia.

Basuto is a rugged plateau. Latitude 28° 45′–30° 45′ south, longitude 27°–29′ 30′ east; area, 11,716 square miles; population, about 406,000. It came under British authority in 1884. European settlement is discouraged. The climate and soil have made the country an important grain and cattle center. The products are wool, mealies, kaffir corn, cattle. The imports are chiefly blankets, plows, clothing, iron and tin ware, groceries. Trade figures include all of British South Africa and the Union of South Africa. Exports (1916–17), $150,105,000; imports, $201,651,000.

Bechuanaland Protectorate came within the sphere of British influence in 1885. Latitude 17° 30′–29° 30′ south, longitude 20°–29° 30′ east; area, 275,000 square miles; population, about 126,000. Headquarters, Mafeking. Cattle-raising is the chief industry.

Rhodesia has been British since 1889. Latitude 8° 30′–22° 30′ south, longitude 22°–33° 30′ east; area, 440,000 square miles; population, 1,653,600. There are two quite distinct divisions. Southern Rhodesia is famous for its gold deposits, and has a good development of cattle-raising and agriculture. A large variety of minerals are found in workable quantity. The exports are gold, chrome iron, copper, maize, tobacco; the imports are live stock, foods, clothing, cotton goods, machinery. Total exports (1916), exclusive of gold, $6,397,000; imports, $12,269,000. Northern Rhodesia is a plateau, suitable for grazing and agriculture. The products are maize, cotton, tobacco, wheat, fruits, timber, and minerals. Exports are chiefly cattle, copper ore, corn, grain and flour, hides. Exports (1915), $782,230; imports, $801,855.

British Virgin Islands:—see British West Indies, p. 174.

British West Africa.—Comprises Nigeria, Gambia, Gold Coast, Ashanti and Northern Territories, and Sierra Leone.

Nigeria, a colony and protectorate, has come into British

possession at different times, beginning with 1861. Latitude 14°–4° 30′ north, longitude 3°–14° east; area, 336,000 square miles; population (estimated), 17,500,000. It is divided into northern and southern groups of provinces. The products are palm oil, rubber, ground-nuts, ivory, live stock, ostrich feathers, cotton, cocoa, coffee. Tin is found over a large area, and other minerals are promising. The chief imports are cotton cloth, liquor, bullion. Exports, palm kernels, palm oil, cotton, tin ore. Exports (1916), $30,482,930; imports, $28,900,590.

Gambia, a colony and protectorate, is a narrow strip extending inland from the west coast. Latitude 13° 30′ north, longitude 17°–14° west; area, 4,500 square miles; population, 146,000. Originally part of the West African settlements, it became a British colony in 1888. Capital, Bathurst. Chief imports, empty bags, cotton cloth, kola nuts, rice, tobacco; chief exports, ground nuts, hides, palm kernels. Value of exports (1916), including specie, $3,527,735; imports, $4,422,770.

The Gold Coast Colony stretches along the Gulf of Guinea. Latitude 11°–5° north, longitude 3° west to 1° 30′ east; area, about 80,235 square miles; population, 1,500,000. Chief products and exports, palm oil, kola nuts, palm kernels, cocoa, rubber, manganese, woods, gold. Chief imports, cotton goods, machinery, provisions, clothing, liquor, building materials, motor cars. Exports (1916), $29,000,000; imports, $30,000,000.

Ashanti is a part of the Gold Coast, British since 1896. Its chief features are an abundance of cabinet woods, rubber trees, and copal. It is eminently fit for agriculture.

The Northern Territories form the northern part of the Gold Coast, British since 1901; capable of great agricultural development.

Sierra Leone, a colony and protectorate. Latitude 10°–7° north, longitude 13° 30′–10° 30′ west; area, 31,000 square miles; population, 1,400,000. Chief products, palm kernels, kola nuts, palm oil; chief imports, cotton goods, liquor, coal, tobacco, hardware. Value of exports (1916), $6,120,000; imports, $6,455,000.

British West Indies.—Comprising six groups of islands:—Bahamas, Barbados, Jamaica and Turks Island, Leeward Islands, Trinidad and Tobago, Windward Islands. Jamaica is described separately.

The Bahamas are a group, consisting of a score of inhabited and many uninhabited islands, southeast of Florida. Latitude 27°–21° north, longitude 79°–69° 30′ west; area, about 4,404 square miles; population, 58,484. Principal islands, New Providence, containing Nassau, the capital (13,554); Abaco, St. Salvador, Long Island, Eleuthera, Andros. Industries are pearl and turtle fisheries, ambergris collecting, fruits. Exports, sponges, hemp, lumber, pineapples; imports, cotton, silk, linen and woolen goods, flour, hardware, sugar, lard, butter and oils, boots and shoes. Exports (1916), $1,665,000; imports, $2,375,000.

Barbados lies to the east of the Windward Islands. Latitude 13° 20′–13° 2′ north, longitude 59° 30′–59° 25′ west; area, 166 square miles; population, 184,000. Mostly under cultivation; sugar and cotton the staple crops. Sugar and molasses are the chief exports; imports, coal, cotton goods, manure, flour. Exports (1916), $11,035,000; imports, $9,255,000.

The Leeward Islands lie north of the Windward Islands, comprising Antigua, St. Kitts, Dominica, Montserrat and the British Virgin Islands, with lesser islands attached to Antigua and St. Kitts. Latitude 18° 45′–15° 15′ north, longitude 64° 45′–61° 15′ west; area, 715 square miles; population, 128,000. Dominica is the largest island (305 square miles), and Antigua next (108 square miles); the remainder are small. The staple products are sugar and molasses, with lime juice, onions, tobacco and cotton. Exports (1916–17), $5,607,765; imports, $3,211,245.

Trinidad lies at the mouth of the Orinoco River, and with it is associated Tobago. Latitude 10° 30′ north, longitude 61° west; area, Trinidad, 1,754 square miles, Tobago, 114; population, 372,000. Capital, Port of Spain (60,000). Noted for its asphalt lakes. Chief products, in addition, cocoa, sugar, rum, cocoanuts, petroleum; imports, foods, manufactures. Trade chiefly with United States and Great Britain. Exports (1916–17), $25,285,000; imports, $22,355,000.

The Windward Islands comprise Granada, St. Vincent, the Grenadines, St. Lucia. Latitude 14°–12° north, longitude 61° 45′–60° 45′ west; area, 527 square miles; population, 176,000. Each island has its own administration. The main products are cocoa and spices, arrowroot, rum, sugar, limes. Exports (1916–17), $5,255,000; imports, $4,000,000.

Brunei:—see British Borneo, p. 159.

Bulgaria.—A Balkan state. Latitude 44° 10′–41° 15′ north, longitude 22° 30′–28° 40′ east (new boundaries); area, 47,750 square miles (1917); population (1917), estimated, 5,517,000; capital, Sofia, 102,812 (1910); other cities—Philippopolis, 47,981; Varna, 41,419; Rustchuk, 36,255; Slivno (Sliven), 50,600. Crossed by Balkan ranges, with the Danube plain in the north and a broad rich plain (East Rumelia) in the south. The Bulgarians are industrious and frugal people, 72 per cent. of whom are farmers. Cattle and sheep-herding are important; iron and coal are the chief minerals. It has a large trade in manufactured articles, and 1,800 miles of railroad in operation. Freed from the Turkish yoke in 1878, many schools have been established, much progress made in all directions, and manufacturing is more advanced than in most Balkan states, especially in footwear, leather, woolen textiles and carpets. Races, two-thirds Bulgarians, one-seventh Turks, the remainder chiefly Rumanians and Greeks. Religion, chiefly Greek Church. Imports are chiefly cattle, cereals, metals, machinery, textiles, hides; exports, wheat, maize, livestock, silk cocoons, hides, altar of roses, fruit, timber, tobacco. Exports (1914), $30,885,000; imports, $48,298,000.

Territorial changes resulting from the war promise to be less than in any other enemy country. There may be a slight contraction along the Serbian frontier, and the southern part of Rumanian Dobrudja, occupied by Bulgarians, may revert to the latter country.

Caicos Island:—see Jamaica, p. 225.

Cambodia:—see French Indo-China, p. 197.

Cameroons, The:—see France, Mandatories of; and Great Britain, Mandatories of, pp. 196 and 210.

Campbell Islands:—see Kermadec Islands, p. 231.

Canal Zone:—see Panama Canal Zone, p. 250.

Canada, Dominion of.—A British possession, with the ultimate executive authority vested in the British sovereign through a Governor General, and legislative functions in a parliament, of which the House of Commons is elected by popular vote. Latitude Arctic Ocean to 42° north, longitude 141°–52° west; area, 3,730,000 square miles; population (1911), 7,207,000; capital, Ottawa, 87,000; other cities—Montreal, 470,000; Toronto, 377,000; Win-

nipeg (1916), 163,000; Vancouver, 100,400, the chief Pacific port; Hamilton, 82,000; Quebec, 79,000; Halifax, the chief Atlantic port, 47,000 (all 1911). Claimed as English territory by virtue of Cabot's discovery; settled at various places as a fur region during the seventeenth century; French claims ceded in 1763; organized as the Dominion of Canada, 1867. It includes nine provinces, British Columbia, Manitoba, Nova Scotia, Ontario, Quebec, New Brunswick, Prince Edward Island, Saskatchewan, Alberta, the Northwest Territories, and Yukon. Eastern Canada is chiefly a broken plateau, low near the coast but rising to a considerable height in Labrador. The Hudson Bay region is low and flat, and plains, largely of prairie type, extend throughout the central provinces to the Canadian Rockies on the west. Thence to the Pacific the country is mountainous. The southern part of the eastern region, once heavily forested, has been largely cleared for farms. The central plain, extending into Athabasca, is a prairie with deep rich soil; it is one of the finest farming regions in the world; and the value of farm crops in 1917 was nearly $1,150,000,000. About 70 per cent. of the population are farmers. Wheat, oats, barley and maize are the grain crops. Fruit raising is important in Ontario and Nova Scotia. Wide areas of forest in northern Quebec and Ontario and in British Columbia yield great wealth in lumber, and the manufacture of wood pulp for paper making is very large. In 1916 the value of forest products was $190,000,000. The mountain region is the source of most of the metals, although coal is mined on the east coast. Canada is one of the leading countries in the production of gold, silver and coal; it is among the first in the production of nickel. It is still one of the foremost fur-producing regions. In 1916, the mineral production was valued at $177,357,454. The Canadian Pacific, the Canadian Northern, and the Grand Trunk Pacific are trans-continental railways. The exports are mainly wheat, foreign produce, forest products, flour, meat, cheese, paper and pulp, oats, iron, copper, and furs. The trade is mainly with Great Britain and United States. Exports (1916–17), $1,375,758,148; imports, for home consumption, $873,437,426. The fisheries employ 95,000 persons, and the value of the products in 1916–17 was $39,000,000. The harbors on the Atlantic coast are nearer to European ports than are those of the United States by several hundred miles.

On the west coast, Pacific ports are materially nearer to Japan than those of the United States. As a result, much commercial traffic between Asian and European ports passes in a direct line across the two oceans and Canada. The Great Lakes and the St. Lawrence River with their ship canals also have a great commercial traffic. Manufacturing requires over 21,000 establishments, and the annual output exceeds $1,400,000,000. Races, British-American, French and Indian. Religions, Protestant and Roman Catholic.

Vancouver Island is worthy of special notice. It is the largest of the mountain islands fringing the Pacific coast of Canada, lying immediately north of the Strait of Juan de Fuca; area, about 20,000 square miles; capital, Victoria; population, about 55,000. The island is a part of British Columbia.

Canary Islands:—see Spain, p. 268.

Cape of Good Hope:—see Union of South Africa, p. 275.

Cape Verde Islands:—see Portuguese Possessions, p. 258.

Cargados Island:—see St. Brandon, p. 264.

Caroline Islands (*German New Guinea*):—see Japan, Mandatories of, p. 229.

Caucasia.—In 1918, the people of Cis-Caucasia and Trans-Caucasia seceded from Russia, forming the Caucasian Republic and the Republic of Georgia. These have not been recognized by the Peace Conference, but it is likely that they may be allowed to form separate states. Latitude 46° 40′–38° 20′ north, longitude 36° 40′–50° 30′ east, reaching from the Sea of Azov and Black Sea to the Caspian; area, 156,000 square miles; population, estimated, 10,674,000. An unknown portion of the Black Sea part of Trans-Caucasia is expected to be allotted to Georgia, a new republic comprising the area inhabited dominantly by Georgians. The topography varies from the low plains between the Black and Caspian Seas to the high peaks of the Caucasus range. The climate is correspondingly varied. Both wet and arid parts of the country are found. Agriculture and stock-raising are the chief industries. Mineral resources are abundant and varied, and mining is important. The oil field of Baku is one of the greatest in Europe. Manufacturing is slight. Foreign trade is considerable, especially in petroleum. The chief cities are Tiflis, 328,000; Baku, 237,000; Saliany, 121,000.

Cayman Island:—see Jamaica, p. 225.

Celebes Islands:—see Dutch East Indies, p. 188.

Ceylon:—see British Possessions; Asia, p. 165.

Chagos Islands:—see Mauritius, p. 235.

Chandernagor:—see French India, p. 197.

Chatham Islands:—see New Zealand, p. 244.

Chile.—A South American republic. Latitude 17°–55° south, longitude 75°–68° west; area, 290,000 square miles; population (1917), 3,870,000; capital, Santiago (1916), 398,000; other cities—Valparaiso, the chief port, 201,500; Concepcion, 68,900; Iquique, 45,500; Talca, 41,600; Chillan, 39,000; Antofagasta, 56,300. A Spanish colony from the period of Spanish conquest to 1818, when independence was made complete.

The country lies west of the Andes Mountains, extending from Peru on the north to Cape Horn, a distance of 2,500 miles. The elevation of its eastern boundary, the Andes range, is from 13,000 to 14,000 feet above the sea-level; many of its peaks rise higher. The greater part of the coast is studded with islands, some of which are very fertile. Chile is one of the most progressive South American states. Most of the farming activities are carried on in short river valleys. Much of the mesa lands between rivers is desert. The north is a rainless region—the desert of Atacama; the center has regular winter rains, and the south has an abundant rainfall and a cool temperature. Agriculture is possible in the north only by irrigation of the river valleys; in central Chile, between Santiago and Valdivia, cereals thrive. Here also tobacco and the grape are cultivated. The central farming region sends foodstuffs to the mining regions. Forests predominate in the south, but are as yet little utilized. Stock raising, chiefly sheep, is increasing. The nitrate mines of the north and the copper mines of the mountain region furnish most of the exports. As many as 2,700,000 tons of nitrate have been exported during a single year. Most of it is used in the intensive farming of western Europe. Copper is the largest metal export, followed by silver and gold. Manufacturing industries, in which Chile is the foremost South American state, consist chiefly of flour, foundry products, steel goods, and textiles. As there is little interior navigation, railroads are of great importance and are well developed. Steamers ply in the coast trade. Races—Spanish-American, European and Indian. Religion—Roman Catholic. Exports (1916), $190,594,275; imports, $83,445,310.

The Juan Fernandez Islands form a group in the South Pacific 400 miles off the coast of Chile, to which state they belong. The islands are of strategic importance only, and are now occupied by a radio station of great power. The reputed connection of Alexander Selkirk with the original of Robinson Crusoe is meretricious. The real Robinson Crusoe, or Kreutznaer, lived on the island of Tobago, near Trinidad.

Easter Island lies in the South Pacific and belongs to Chile, from which it is distant about 2,000 miles. Latitude 27° south, longitude 109° west; area, about 45 square miles; population, estimated, 150; at one time was several thousand. The island is famous for its wonderful archæological remains of stone buildings and images, all of colossal size. The natives now on the island migrated from the Tubuai Islands; they have no knowledge of the origin of the remains, which were the work of a prehistoric race. In 1863 many of the inhabitants were kidnapped by Peruvians and carried off to work the guano diggings on the Church Islands, off the Peruvian coast.

China, Republic of.—Next to Siberia, the largest political division of Asia. Latitude 54°–18° north, longitude 74°–134° east; area, about 1,532,420 square miles; population, estimated, 302,-110,000; capital, Peking, estimated, 700,000; other cities—Canton, estimated, 900,000; Hankow, estimated, 1,321,000; Tientsin, estimated, 800,000; Fuchow, 624,000; Shanghai, estimated, 650,000; Chunking, estimated, 700,000. The early history of China dates back to at least 2,200 B.C. It is thought by some that Confucius —the Latinized form of K'ung-fu-tse—was contemporary with the Prophet Isaiah. The middle period begins about the year 1325, when European travelers began to visit the country. The Imperial period ends with the fall of the Manchu invaders and the beginning of the republic in 1912.

China contains over one-seventh the population of the earth. Its civilization, arts and culture are the oldest in the world, and for centuries have been practically unchanged. It was about the last of the eastern nations to open its ports to the world. Western methods of manufacturing by improved machinery have been introduced. The rivers and canals are of great importance for transportation. Its largest cities stand on their banks, while many thousands of people live in boats which float on their surface. More than 5,900 miles of railway are in operation, and

2,273 under construction. Trunk lines from Peking extend to the Trans-Siberian Railway, to Shanghai, and to Hankow. The last named is completed nearly to Canton.

Manchuria, Mongolia, Tibet, and Chinese Turkestan are dependencies of the republic. Tibet is high, cold and barren, excepting in some of the lower lands in the south. Manchuria has fine and well-tilled agricultural lands in the south, raising large crops of wheat, beans and other produce. It is the most valuable part of the empire outside of China proper. Mongolia and Chinese Turkestan are arid and sparsely peopled.

Rice forms the principal food in China; fish comes next. Domestic animals, excepting hogs and poultry, are of subordinate importance. Ninety per cent. of the people are engaged in agriculture. Tillage of the soil is most intensive. Each family has only a half acre to two acres, and the hoe takes the place of the plow. The country is very rich in minerals, especially coal and iron; but mining methods are primitive, and the output is small. Tea, silks, soy beans, vegetable oils, and porcelains are the exports that connect China with the rest of the world. Cotton goods, rice, cigarettes, fish, metals and machinery are the chief imports. Great Britain has most of the trade. Religions—Confucianism, Buddhism and Taoism. Exports (1916), $401,498,000; imports, $430,339,000.

Chinese Possessions.—China has several dependencies and frontier provinces, loosely connected with the republic. Chief of these are Manchuria, Tibet and Mongolia.

Manchuria. Latitude 53° 30′–38° 30′ north, longitude 115°–135° east; area, about 363,610 square miles; population, approximately 20,000,000; capital, Mukden (160,000). Railway facilities have increased greatly of late, and the cultivation of the soya bean has aided in a development more rapid than in any other part of China. Exports (1915), $142,076,715; imports, $63,355,915.

Tibet. Latitude 39°–22° north, longitude 79°–101° east; area, 463,200 square miles; population, estimated, 6,000,000; capital, Lhassa (15,000 to 20,000). Some agriculture is carried on, as well as stock raising. Hand weaving is common. Minerals mined are gold, borax and salt. Trade chiefly with China and India. Exports to these amounted in 1916-17 to $2,380,000; imports are negligible.

Sin-Kiang consists of Chinese Turkestan, Kulja and Kashgaria, lying between Mongolia and Tibet; occupies 550,340 square miles; population, about 1,200,000. Parts near large rivers are under cultivation. Wool, cotton and silk are produced, and jade is worked. As a whole, the country shows much promise.

Mongolia. Latitude 54°–32° 30′ north, longitude 82° 30′–126° east; area, 1,367,600 square miles; population, about 2,600,000. Inhabitants chiefly nomads, and whatever prosperity is found is due to Chinese immigrants. A vast territory can be reclaimed by irrigation. Some foreign trade is conducted, the exports being wool, hides, furs and horns. Exports from Urga, the chief center (1908), $4,950,000; imports, $7,900,000.

Chinese Turkestan:—see Sin-Kiang, p. 267.

Chosen (Korea).—A vassal state which is practically an integral part of Japan. Latitude 43°–34° north, longitude 130° 45′–124° 40′ east; area, 84,738 square miles; population (1916), 17,500,000; capital, Seoul, estimated, 300,000; other cities—Ping-Yang, 173,000; Fusan, chief port, estimated, 25,000; Chemulpo, estimated, 13,000 —all doubtful as to population. Thought to have been founded in the fourteenth century, Korea was under Chinese influence until 1895, when China renounced her claim. In 1904 it became a vassal state of Japan; in 1910 it was formally annexed. A mountainous peninsula, about 600 miles long and 135 miles wide at its broadest part. The climate is mild and delightful. It has several excellent harbors. Most of the people are farmers; agriculture thrives best in the southern half of the peninsula, rice and beans being the chief crops. The industry is greatly hampered by lack of room, as the valleys are narrow. In many localities mountain-sides are terraced and cultivated. Gold has been found in many places, and foreign companies, especially American, hitherto have worked mining concessions. These are now largely in the control of the Japanese. Ponies, wheelbarrows, and sedan-chairs are much used for freight and passenger traffic. A railway extending from Fusan is connected with the Peking branch of the Trans-Siberian Railway. A short branch line extends to Chemulpo. The various ports are open to foreign traders. Practically all commerce and manufactures are controlled by the Japanese. Religions, Buddhism, Confucianism. Imports largely cotton and silk goods and grasscloth, machinery, kerosene, sugar, paper, coal, timber;

exports, rice, beans, hides, cattle, gold. Exports (1916), $294,010,000; imports, $372,284,000.

Christmas Island:—see Straits Settlements, p. 270.

Cochin-China:—see French Indo-China, p. 197.

Cocos Islands:—see Straits Settlements, p. 270.

Colombia.—A South American republic. Latitude 5°–12° south, longitude 78°–67° west; area, 440,846 square miles; population (1912), 5,100,000; capital, Bogota (1912), 121,300; other cities —Medellin, 71,000; Barranquilla, 49,000 (with Puerto Colombia); Cartagena, 37,000; Manizales, 35,000. A Spanish possession during the period of Spanish conquest, it became independent of Spain in 1819, comprising at that time the territory now included in Venezuela and Ecuador. In 1832 the republic of New Granada was formed, and in 1863 it became officially the United States of Colombia. Low plains and valleys in the north give abundant pasturage to cattle. South of the Caribbean coast the ranges of the Andes cover about one-third of the state. The high plateaus among them yield wheat and other temperate crops. Rainfall is very heavy on the narrow Pacific slope, which is covered with dense tropical vegetation. East of the mountain region is a wide expanse of selvas (forested plains), rich in rubber, also llanos, or grass plains, where cattle graze. Coffee of good quality is cultivated at middle altitudes. The great differences in altitude give Colombia diversity of climate and a great variety of the vegetable products of the world. In the coast plains and river valleys the products are purely tropical; between 3,000 and 6,500 feet, maize and coffee predominate; between 6,500 and 10,000 feet, the climate is delightful, and wheat, vegetables and northern fruits are cultivated. Colombia is the source of the world's supply of emeralds. Gold-mining is an important industry. Wild and the cultivated rubber is an important product. Vegetable ivory, drugs, dyewoods and crude rubber are the chief items of foreign trade. The manufacture of " panama " hats is an industry of considerable importance. The population live chiefly on the high plateaus and at the seaports. Few countries are so poorly provided with means of transportation. There are about 400 miles of railroad, almost no wagon roads, and only poor mule paths. The Magdalena River is navigable nearly to Honda, 600 miles, the Cauca to Caceres, and the Atrato to Quibdo; but the most populous regions among

the highlands are reached only by mule trains. The coast towns import wheat more cheaply than they can bring it from their own highlands. The few industries are centered around Bogota. Most of the foreign trade is carried on with the United States and Great Britain. Principal exports, coffee, hides, bananas, gold; imports, flour, lard, petroleum and cotton goods, chiefly from the United States. Races, Spanish-American and Indian. Religion, Roman Catholic. Exports (1916), $31,654,275; imports, $28,922,525.

Commerson Island:—see Bismarck Archipelago, p. 158.

Comoro Archipelago:—see Madagascar, p. 234.

Constantinople, State of.—It is proposed by the Peace Conference to restrict the Government of Turkey to portions of Turkish territory in Asia Minor; and to erect an internationalized state comprising the area northwest and west of Constantinople, and a protecting strip on the Asiatic side. On the Black Sea coast the boundary with new Greece begins about at Midia, latitude 41° 40′ north, and runs directly southwest to the mouth of the Maritza River, north of the Gulf of Zaros. It thus protects all the Dardanelles-Marmora-Bosporus section on the north. In Asia Minor the boundary with Turkey starts at the junction of the state of Constantinople and the vilayet of Kastamuni on the east, and describes a curved line to the head of a bay on the Sea of Marmora, near the village of Gemlik. The location of the two fragments lies, then, between 41° 40′–40° 20′ north, and 26°–31° east. The state will not be self-supporting in a large commercial way, but is an artificial creation to escape a situation intolerable to humanity. By it, the Black Sea should be forever free to commerce.

Cook Islands:—see New Zealand, p. 244.

Corisco Island:—see Spanish Guinea, p. 269.

Costa Rica.—A Central American republic. Latitude 11°–8° north, longitude 86°–82° west; area, estimated, 23,000 square miles; population (1917), estimated, 441,342; capital, San José, 35,654; other cities—Cartago, 12,900; Heredia, 8,200; Limon, Atlantic port, 6,700; Punta Arenas, Pacific port, 5,000—all estimated, 1915. An unorganized Spanish possession, which became a province about the end of the sixteenth century, and an independent republic in 1821. Two parallel mountain ranges cross Costa Rica, with the depression of Cartago between them. Several active vol-

canoes are in the northern range; among them Turrialba and Irazu are over 11,000 feet in height. The southern chain also has lofty mountains. A third of the population live on the Pacific or dry side of the mountains, many having relations with the plantations that supply Costa Rica with more than half her exports. Coffee is the largest crop, and is noted for its excellence. Cattle are herded on the uplands, but the home supply of beef is not equal to the demand. San José, the capital, in the heart of the coffee district, is connected by rail with Limon, the Atlantic port. Coffee and bananas are the chief exports. Manufacturing is increasing. The steamships of the United Fruit Company carry fruit-cargoes to New Orleans, Mobile, New York, and Boston. The imports, largely cotton goods, wheat and flour, come mainly from the United States. Races, Spanish-American and Indian. Religion, Roman Catholic. Exports (1917), $11,382,000; imports, $5,595,000.

Crete.—Also called Candia; an island southeast of Greece. Latitude 35° north, longitude 24°–26° east; area, 3,330 square miles; population (1916), estimated, 320,000; seat of government, Canea (Khania), estimated, 25,000. The island was a vassal of Venice from 1211 to 1669, when it fell into the hands of the Turks. In 1898 it was made an autonomous state by Great Britain, France, Italy, and Russia; in 1913 its annexation to Greece was completed. Surveys have shown that the island is rich in minerals. The chief wealth is now derived from the plantations of olives, oranges, and lemons.

Cuba.—A republic of the West Indies. Latitude 23°–20° north, longitude 85°–74° west; area, 44,215 square miles; population (1916), estimated, 2,627,536; capital and chief port, Havana (1916), 359,259; other cities—Cienfuegos, 82,000; Camaguey, 93,000; Matanzas, 56,500; Santiago, 63,400; Manzanillo, 61,000. A Spanish colony from the time of its discovery by Columbus until 1898, when it became a republic. It is practically a protectorate of the United States, which must approve treaties and national loans, reserving the right of intervention in case of revolution or of violation of treaty.

Cuba, the largest island of the West Indies, and the largest fertile island of America, embraces nearly half the land surface of the West Indies. Its deeply indented coasts provide many excellent harbors, which form one of its great commercial advantages.

In the west are the low mountains, Sierra de los Organos, on whose southern slopes, the Vuelta Abajo district, the most highly prized tobacco of Cuba is raised. In the east are highlands, where agriculture is much diversified, but this region yields less for export than other parts of the island. Between the eastern and western mountains are the rich central plains that produce the great sugar crop of Cuba and give pasturage to large numbers of cattle. The climate is tropical, tempered by the northeast trade winds. The cities in which sanitary regulations are enforced are healthful. Sugar and tobacco are the principal export crops. About two-thirds of the tobacco crop is exported. Cocoanuts and bananas come from the eastern part of the island. The Juragua mines in the eastern part yield manganese iron ore which is extensively exported. About 2,000 miles of railway are in operation. Steamship lines connect Havana and Santiago with Spain, Great Britain, and the United States. Steamers in the coastal trade make the circuit of the island. The population consists chiefly of Spanish-Americans and Negroes. Religion, chiefly Roman Catholic. Havana is the chief tobacco and Matanzas the sugar port, the United States having the greater part of the trade. The principal imports are cotton goods, machinery, and cereals. Exports (1917), $357,040,000; imports, $261,377,000.

Culebra Island:—see Porto Rico, p. 255.

Curaçao:—see Dutch West Indies, p. 189.

Cyprus:—see British Possessions; Asia, p. 165.

Cyranaica:—see Tripoli and Cyranaica, p. 274.

Czecho-Slovakia.—A new state of central Europe, comprising parts of Austria and Hungary occupied predominantly by Czechs, Slovaks and Moravians; and recognized by the Peace Conference. Its territory is that of Bohemia, Moravia, Lower Austria nearly as far south as the Danube, and part of northern Hungary. Latitude 51°–48° north, longitude 9° 30′ to about 22° 30′ east; area and population alike difficult to forecast, tentative figures being 47,000 square miles and 17,500,000. Important cities, Prague, 541,000 (1914); Brünn, 132,000. The situation of the country, entirely separated from the sea-way to world trade, is poor in the extreme; and a right-of-way through a foreign country must be secured for its foreign commerce. In order to safeguard international interests, the German peace treaty of May, 1919, gives

assurance of free access to the sea, through Trieste and Fiume on the south and through Hamburg and Stettin on the north. The natural resources, both of soil and minerals, are great. Agriculture is highly developed in the west, and mining is carried on in Bohemia and Hungary extensively. Wheat, barley, oats and rye are raised over large areas. Coal and lignite, gold, iron, copper, lead, zinc and graphite are all worked. Manufactures of many kinds, notably glass and its wares, and beer, are highly developed.

Dahomey:—see French Possessions; Africa, p. 199.

Damao (Daman or Damaun):—see Portuguese India, p. 258.

Danish Possessions.—Until recently, Denmark has had three colonial possessions:—Iceland, Greenland and certain of the Virgin Islands, popularly known as the Danish West Indies. The first has just declared its independence (see Iceland); the last has been purchased by the United States; there remain only the coastal strips of Greenland.

Danish West Indies:—see Virgin Islands, p. 290.

Denmark.—A limited monarchy, including the peninsula of Jutland and the nearby islands. Latitude 58°–54° north, longitude 8°–12° 45′ east; area, 15,600 square miles; population (1916), 2,940,979; capital, Copenhagen and suburbs, 605,772; other cities —Aarhuus, 65,900; Odense, 45,000; Aalborg, 38,000. Founded as a kingdom in 1448. In 1852 the Great Powers of Europe guaranteed its integrity. The kingdom is entirely lowland, and the west coast is protected from the sea by dikes at many points. The Baltic islands, excepting Bornholm, are flat and fertile, but large areas of moor and sand are met in Jutland. The climate is oceanic, mild for the latitude, but great storms sometimes lash the coasts. Agriculture and cattle breeding are the chief resources. Eighty per cent. of the land is productive; the pastures are large and rich; and stock farming is the special sphere of the Danish farmer. The export of butter and eggs is enormous. The kingdom is poor in minerals and wanting in metals. Fishing is an extensive industry. Beet sugar is refined, flour mills are numerous, factories make sail-cloth, leather, and prepare tobacco, and the brewing and distilling interests are large. Copenhagen is one of the free ports of Europe, all goods admitted to the free port being exempt from customs duties. Thus they may be reshipped to foreign ports without examination, but if sent into Denmark

outside of the free port, they must pay tariff charges. Copenhagen and Odense, the chief centers of manufacture, produce also machinery, porcelain and cloth. The rail and wagon roads are adequate and excellent. Race, Danish. Religion, chiefly Lutheran. The chief trade is with Germany and Great Britain. Imports, metals and hardware, textiles, coal, cereals; exports, provisions, animals. Exports (1914), $241,000,000; imports, $220,900,000.

D'Entrecasteaux Islands:—see Papua, p. 250.

Désirade Island:—see Guadeloupe, p. 213.

Diego Garcia Island:—see Chagos Islands, p. 179.

Dindings, The:—see Straits Settlements, p. 270.

Diu:—see Portuguese India, p. 258.

Dominica:—see British West Indies, p. 174.

Ducie Island:—see British Possessions; Australasia, p. 169.

Dudoza Island:—see British Possessions; Australasia, p. 169.

Duff Islands:—see British Solomon Islands, p. 173.

Duke of York Islands:—see Bismarck Archipelago, p. 158.

Dutch Borneo:—see Dutch East Indies, p. 188.

Dutch East Indies.—Colonial possessions of the Netherlands. Latitude 6° north–11° south, longitude 95°–141° east; area, 735,000 square miles; population (1912), 48,000,000; capital and commercial center, Batavia, 138,500; other cities—Soerabaya, 157,000; Soerakarta, 118,400; Samarang, 97,000. The islands were held by the Dutch East India Company from 1602 to 1798, at which time they were taken over by the Dutch Government. This group of islands comprises Java, Madura, Sumatra, Dutch Borneo, Banca, Billiton, Celebes, Dutch New Guinea, the Riau-Lingga Islands, the Moluccas, and the Sunda Islands. Java, the most important, produces large quantities of sugar, tea, coffee, indigo, cinchona bark, and tobacco. Sumatra produces the famous cigar-wrapper tobacco, used all over Europe and the American continent, and a very choice coffee. The Dutch are very skillful in their colonial policy. They protect the natives from arbitrary oppression and spoliation, and have made the East Indies an inexhaustible source of wealth for the mother country. The climate is tropical, but all the larger islands are mountainous, and cool retreats are accessible. Java is the most densely peopled land near the equator. Next to Cuba, it is the largest producer of cane-sugar, and the " old plantation " coffee is sent to all parts of the

world. The island is the largest producer of quinine, and the tea plantations yield important returns. Sumatra's products are like those of Java, but it grows a far larger amount of tobacco. The products of the other islands are about the same as those of Java; Banca and Billiton furnish the major part of the world's tin supply. A large part of the spices, tortoise-shell and pearl-shell in the world's trade comes from the various Dutch islands. Four-fifths of all products are sent to Rotterdam and Amsterdam, where they are greatly enhanced in value by manufacture and preparation for market. Dutch merchants sell these products in many lands, and send to the East Indies great quantities of cottons and other manufactures; so that the Dutch East Indies are the best customers of the Netherlands, excepting Europe. Races, Malayan and Chinese. Exports (1916), $361,732,000; imports, $186,000,000.

The size and population of the various divisions follow:—Java and Madura 50,557 square miles, population (1912) 36,035,435; Sumatra 159,739 square miles, population 3,782,990; Riau-Lingga Archipelago 16,300 square miles, population 187,460; Banca 4,446 square miles, population 118,653; Billiton 1,863 square miles, population 58,840; West Coast Borneo 55,825, population 467,158; Borneo, South and East Districts, 156,912 square miles, population 905,300; Celebes Islands 72,070 square miles, population 2,677,690; Molucca Islands 195,653 square miles, population 1,061,072; Timor Archipelago 17,698 square miles, population 950,000; Bali and Lombok 4,065 square miles, population 1,207,310.

The Molucca Islands deserve special mention. They are a group of volcanic islands crossed by the equator and the 130° meridian east, best known by the name of "Spice Islands." The islands are the chief source of many of the spices of commerce. Practically all the nutmegs come from the Banda Islands, a group of the Molucca archipelago. The people are mainly Malays. Spices are the chief exports and these are shipped from Batavia, Java.

Dutch Guiana:—see Surinam, p. 270.

Dutch New Guinea:—see Dutch East Indies, p. 188.

Dutch West Indies.—Possessions of the Netherlands in the West Indies are Surinam, or Dutch Guiana, and Curaçao.

Surinam is situated on the north coast of South America, latitude 6°–2° north, longitude 58° 20′–53° 50′ west; area, 46,060

square miles; population (1917), 91,622, exclusive of forest Negroes and Indians. Capital, Paramaribo, 38,190. Became Dutch in 1667, by treaty with England, and has been in English hands twice since for short periods. Chief products, sugar, cacao, bananas, coffee, rice, maize, rum and molasses. Gold also is exported, as well as balata, a rubber gum. Exports (1916), $3,355,850; imports, $2,463,000.

The colony of Curaçao consists of six islands, of which Curaçao (210 square miles, population, 1917, 34,168), is the chief. Latitude 13° north, longitude 69°–68° west; area, 403 square miles; population (1917), 57,381. Chief products are maize, beans, pulse, cattle, and lime phosphate. Exports (1916), $1,007,650; imports, $2,564,090.

Eagle (Trois Frères) Islands:—see Mauritius, p. 235.

East African Protectorate:—see British East Africa, p. 164.

Easter Island:—see Chile, p. 179.

East Falkland Island:—see Falkland Islands, p. 193.

Ecuador.—A South American republic. Latitude 2° north–4° south, longitude 81°–73° west; area, 116,000 square miles; population, estimated, 2,000,000; capital, Quito, 70,000; other cities—Guayaquil, chief seaport, 105,000; Cuenca, 50,000; Riobamba, 18,000—all estimated. Formerly a part of New Granada (Colombia), from which it separated in 1830. The constitution now in effect was adopted in 1906.

Ecuador is so called because it lies under the equator. Its position and surface illustrate the influence of altitude on climate and production. On the narrow Pacific coast plain there are tropical forests, high grasses, rubber, cacao and other products of the hot lands. The people live in thin-walled houses. Seventy miles to the east is the high plateau of Ecuador, between Andine ranges, where the population is housed in stone and adobe dwellings amid fields of wheat, barley, potatoes and alfalfa. Farther east the land slopes to another forested tropical plain. The lowland east of the excellent port of Guayaquil and the plain of the Rio Guayas are a continuous garden, rich in tropical vegetation. Here sugar-cane is cultivated. Cacao is the principal wealth of the country, and Ecuador is the chief source of the world's supply. Cacao forms three-fourths of the total exports. The wheat-fields of the high plateau hitherto have been inaccessible because only

mule paths connected the high with the low-lying regions. The railroad from Guayaquil to the plateau of Quito now reaches the grain-growing district. The eastern lowlands are rich in rubber and gold. The coast Indians produce the famous Panama hats from the fine straw of the toquilla, called Panama simply because they are forwarded to market through that port. There are few other manufactures except the products of a small number of woolen and cotton mills, saw mills, chocolate works, and soap factories. Most of them are at Guayaquil, the best harbor on the west coast of South America, which in the past has been exceedingly unhealthful. The imports are mainly manufactures and foodstuffs. Races, Spanish-American and Indian. Exports, 1916, $18,075,800; imports, $9,599,000.

Egypt.—Latitude 32°–22° north, longitude 24°–36° east; area, estimated, 350,000 square miles; population (1917), 12,570,000, of whom about 275,000 are of European descent; capital, Cairo (1917), 785,000; chief seaport, Alexandria, 435,000; other cities—Port Said, Suez Canal port, 90,000; Tanta, 74,000; Damanhûr, 40,000; Mansura, 49,000; Asyût, 51,000. A kingdom in early biblical times, and probably the oldest organized nation in the world, Egypt was successively a Greek, a Roman, a Muhammadan, and a Turkish vassal state. From the time of the acquisition of the Suez Canal by the British, the influence of Great Britain became paramount. In 1914 Egypt became a British protectorate.

The habitable and food-producing part of Egypt is confined to the flood plain and delta of the Nile, an area not materially greater than 12,000 square miles. The rest of the country is upland, the wind-swept Libyan desert, which is a continuation of the Sahara. The Nile traverses this desert, and where it overflows its flood plain or is carried by irrigation to the land, it covers the desert with luxuriant subtropical flora. It is thus the life of Egypt. The greater part of its waters comes through the Blue Nile from Abyssinia, and the fertilizing silt is also chiefly derived from the eastern tributaries bringing rock waste from the Abyssinian highlands. Much water was wasted for centuries, because at flood time the Nile brings a larger supply than can be utilized, while at low Nile there is not sufficient water for the crops. This difficulty has been removed by the great dam built at Assuan, which impounds the surplus waters at flood, forming a great lake which at low Nile

is run through the sluices and carried into the irrigation ditches; so that today Egypt is raising two to three crops from the same land each year where formerly only one crop was possible. Besides supplying food for its millions of inhabitants, Egypt is sending to American and European factories almost all the cotton it raises, a fiber of peculiar excellence. Wheat, maize and onions are also large export crops. The live-stock industry is subordinate, although many dromedaries, cattle, goats and poultry are raised. There is little mining, although gold is now being taken from the mountains east of the Nile. The Suez Canal made Egypt the connecting link between Europe and eastern Asia, and stimulated its trade. Races, Egyptian, Greek, Italian, British and French. Religion, chiefly Muhammadan. Exports (1917), $250,380,000; imports, $163,175,000.

Elhasa:—see Hasa, El, p. 215.

Ellice Islands:—see Gilbert and Ellice Islands, p. 208.

Eritrea:—see Italian Possessions, p. 222.

Esthonia.—A new state proposed in the Peace Conference to be carved out of western Russia. As projected, it occupies all of the old government of Esthonia, south of the Gulf of Finland, part of western Pskof, and northern Livonia; and in a general way embraces the area occupied predominantly by Esthonians. Its location is latitude 59° 35′–57° 15′ north, longitude, including the islands of Osel and Dagö off the west coast, 22°–28° east; area and population of old Esthonia, 7,605 square miles and 512,000; of the new country perhaps 16,000 square miles and 1,185,000. Principal city, Reval (or Revel), 137,000 (1913), a naval port of importance. The land is low, the soil chiefly a mixed glacial type, the climate severe. Agriculture is the chief industry, and is very scientifically administered. Cattle-raising flourishes. Crops are mainly rye, oats, barley, potatoes and other vegetables. Meat and butter are exported. A considerable number of manufactories have arisen. The dominant race, Esthonians, are allied to the Finns.

Ethiopia:—see Abyssinia, p. 142.

Europe.—The smallest of the continents proper. Latitude of mainland 71° 6′–36° north, longitude 9° 28′ west–36° east; area, somewhat over 3,800,000, with islands; population, previous to the World War, approximately 400,000,000, giving a population

density of 106 per square mile. The groups of islands in the Arctic Ocean belonging to Europe, ending with Franz Joseph Land, extend the boundaries of European territory far in that direction.

Europe is a peninsula of peninsulas, with a coast line of extraordinary length—20,000 miles without minor embayments, and nearly 50,000 miles when measured along the actual water front. The average elevation of the continent is low, and the lower portions of most of the streams are navigable. The resultant accessibility of the interior of the land has had a dominant influence upon the economic advance of many of the European nations. The population density, while high on the average, ranges from 1,000 in industrial regions to almost zero in rocky or desert-like areas.

Taken throughout, Europe presents remarkable diversity of condition. The western portions are on the whole the most advanced in the world; the eastern and southeastern parts are singularly backward. Topography has influenced this condition in part, and accessibility to the world's foreign markets more. The complementary position of western Europe and the United States—strategically located on opposite shores of the narrowest ocean, has stimulated greatly the economic advance of the parts adjacent to the common ocean highway.

It is noticeable that, while a few European countries are chiefly agricultural, and early in economic stage, as Russia in 1914, even here parts had developed manufacturing to a considerable degree, as Russian Poland. Most of the countries listed as industrial have so large an amount of agriculture that they are as much characterized by the one activity as by the other. Great Britain has advanced farthest in this respect, her agriculture being relatively small and her manufacturing very extensive.

Faeroe Islands:—see Denmark, p. 187.

Falkland Islands:—see British Possessions; America, p. 164.

Fanning Island:—see Gilbert and Ellice Islands, p. 208.

Fead Islands:—see Abgarris Islands, p. 142.

Federated Malay States:—see British Possessions; Asia, p. 165.

Fernando Po Island:—see Spanish Guinea, p. 269.

Fiji Islands:—see British Possessions; Australasia, p. 169.

Finland.—Formerly a grand duchy of Russia; proclaimed its

independence on July 20, 1917; on October 7, 1917, it was declared a republic within Russia; and on December 9, 1917, it became an independent republic, now recognized by all the great nations. Latitude 70°–60° north, longitude 20° 15′–33° east; area (1915), 125,689; population (1915), 3, 277,100. Both area and population are likely to be somewhat augmented by the accession of Russian territory along the Arctic coast about 80 miles wide, with an area estimated at 10,400 square miles and a population numbering perhaps 16,000. At present there is no capital, Viborg and Vasa being used by the two main factions engaged in civil war.

Agriculture forms the occupation of a large part of the people; wheat, rye, barley, oats and potatoes being raised. Cattle are numerous. A large area is forested, the woods being of a fine quality of northern varieties. Most of the country is too flat for extensive water-power, but innumerable lakes are found, many of which could be made to furnish low falls. Internal communication is largely by these chains of lakes; in addition, there are 2,506 miles of railway. The only mineral worked is iron ore, a few thousand tons yearly being the output. Iron is made chiefly from imported ore. Considerable manufacturing has developed, chiefly wood industries, iron and mechanical works, textiles and paper. Foreign trade has been mainly with Russia and Germany. Imports are cereals, coffee, sugar, iron and its wares, cotton, machinery; exports, timber, butter, paper. Exports (1913, the best year), $75,899,815; imports, $92,893.

Formosa:—see Japanese Possessions, p. 227.

France.—A republic of western Europe. Latitude 51°–42° 20′ north, longitude 4° 50′ west–7° 40′ east. In 1914 the area was 207,054 square miles; population, 39,602,258. The Peace Conference has awarded to France 5,680 square miles, with an estimated population of 1,874,014; total area, 1919, 212,734; population (1919), according to normal increase should total 46,862,000; the actual figure is unknown; capital, Paris (1911), 2,890,000; other cities—Marseille, 551,000; Lyon, 524,000; Bordeaux, 262,000; Lille, 218,000; Nantes, 170,500; Toulouse, 149,500; St. Etienne, 149,000; Nice, 143,000; Le Havre, 136,000. Under normal conditions, 42.5 per cent. of the population of France is urban.

The history of the country extends back to the Roman conquest

of Gaul, a few years before the Christian era. The reign of the Bourbons (1589–1792) marks the period of chief development. France was twice a republic and twice an empire before the overthrow of Napoleon III in 1870, when it became a republic for the third time.

With the sea on three coasts, the republic is favorably situated for sea traffic with the western world and the orient.

The greater part of France is lowland or occupied by mountains and dissected plateaus of only moderate height. A great plain starts at the Atlantic border with Spain and extends through western and northern France, thence eastward across Belgium, Netherlands, Germany, Poland and Russia. It is one of the world's great highways. The eastern half, on the whole, is mountainous. The soil is nearly everywhere fertile. France has over 150 rivers navigable for large or small craft, the most important being the Seine, Loire, Charente, Gironde, Adour, Rhône, Meuse, Somme and Moselle. Many excellent and convenient canals connect all the principal rivers. Navigation is confined mainly to the estuaries, except for river craft of very light draught. Many of the rivers are canalized. These with the regular canals furnish 7,000 miles of interior navigable waters. There are thus about 3,000 miles of canals, 5,500 of navigable rivers; for land transportation there are 29,000 miles of national roads, beside a larger number of secondary roads; and 26,000 miles of railway lines. The delightful climate of France insures to agriculture a fortunate combination of central and south European conditions. More than half the surface is under cultivation, and nearly half the people live on farms, most of them so small that France has as many farm holdings as there are in the United States. There are many harbors but few good ones, most of them being either shallow estuaries or artificial harbors like Cherbourg. The sea trade is carried on chiefly through Marseille, Cherbourg, Le Havre, Boulogne and Bordeaux. Great improvements were made in the old harbors during the World War, and a number of new ones created; this may affect future trade routes somewhat. Next to Russia, France is the largest wheat-growing country of Europe. Potatoes form the largest crop, succeeded by wheat, oats and beet-sugar. France is the greatest wine-growing country of the world. All domestic animals are raised scientifically, and dairy products have

high reputation. The fisheries are very important, and sardine canning is one of the large industries. France has much coal in several basins, but chiefly along the Belgian border. Many of the mines were destroyed by the Germans, and the present supply is not equal to its demand. The restoration of Alsace-Lorraine has given the state its former iron mines, making it easily supreme in continental Europe, and the extension of its eastern boundary restores to it many thousand acres of excellent farming land as well. Moreover, Lorraine contains the western end of the Sarre coal field, now restored to France in full; and the remainder of the field has been placed under the League of Nations, virtually as French territory temporarily (738 square miles, population, 234,200). This greatly improves the coal situation, as the mines were abandoned uninjured by the Germans in 1918. It will require five years for French mining to resume a normal position. A special point must be made of the acquisition in Alsace, near the town of Thann, of potash deposits that may yet break the German potash monopoly. Manufacturing is very highly developed. French silks, cottons and woolens are unsurpassed. Many classes of French goods, including porcelains, glassware and metal products, are distinguished for good taste, elegance and finish. The Paris district particularly is noted for the production of *articles de luxe*. Race, French; religion, Roman Catholic; trade, chiefly with United Kingdom, United States, Belgium, Germany, Algeria. Imports, chiefly cereals, coal and coke, metals, raw cotton, machinery, woolen manufactures; exports, silk manufactures, woolen goods, wine, motor cars, butter, wearing apparel, lace. Exports (1913), $3,114,840,000; imports, $3,829,020,000.

France, Mandatories of.—Two of Germany's African colonies have been divided by the Peace Conference between Great Britain and France, the latter receiving by far the larger part of the territory.

The Cameroons (ex-German Kamerun). Latitude (south of Lake Chad) 12° 30′ north–1° 30′ (Congo River) south; longitude 8° 30′–°18 east; area, 291,950 square miles; population, 3,540,000; seat of government formerly at Buëa. The chief trading centers are Duala (22,000), Victoria, Kribi, Rio del Rey, and Campo. In 1884, owing to trouble among the blacks, the resident foreign traders requested Great Britain to establish a protectorate. Upon

her refusal, a successful appeal was made to Germany. The coast regions are fertile, supporting valuable tropical crops; cocoa, coffee, rubber, kola, oil palms. Hardwoods, especially ebony, abundant. Cattle raising is a success inland. Mineral resources scarcely known, but considerable in amount. Imports are textiles, liquor, timber, salt, iron utensils; exports, rubber, palm kernels and oil, cocoa, ivory. Exports (1912), $5,514,000; imports, $8,149,475.

The only part of the Cameroons allotted to Great Britain is a narrow strip along the northwestern boundary, adjacent to Nigeria.

Togoland. Latitude 11°–6° 15′ south, longitude 0° 15′ west–2° east; area, 33,700 square miles; population, 1,032,346; coast line only about 32 miles; capital and chief port, Lome. The German protectorate was established in 1884. A hilly country, except on the coast; much of the land grass-covered, some cultivated. Oil palms, caoutchouc and dye-woods grow inland; maize, tapioca, ginger and bananas are grown. Trade in palm kernels and oil, and gum; plantations of palms, coffee, cocoa, tobacco, rubber and fiber plants are in operation. Imports are machinery, rice, sugar; exports, cocoa, rubber, palm oil and kernels, cotton. Exports (1912, the highest year), $2,490,000; imports, $2,857,000.

On the western side of Togoland, a narrow strip adjacent to Gold Coast and Ashanti has been allotted to Great Britain. The port of Lome is included in French Togoland.

French Congo:—see French Possessions; Africa, p. 199.

French Equatorial Africa:—see French Congo, p. 197.

French Guiana:—see French Possessions; America, p. 201.

French Guinea:—see French Possessions; Africa, p. 199.

French India:—see French Possessions; Asia, p. 202.

French Indo-China.—Consists of five states: the Colony of Cochin-China, and the Protectorates of Annam. Cambodia, Tonking and Laos, Kwan-Chau-Wan, and the territory around Battambang. The region as a whole extends from 23° 15′–8° 30′ north latitude, and from 100° 15′–109° 30′ east longitude. The total area is about 256,000 square miles; population (1914), 16,990,230. The whole forms a single customs union. Exports (1916), $59,549,560; imports $46,866,480. The chief export is rice; others are fish, pepper, cotton, sugar, rubber, coal.

Cochin-China occupies the southern end of the French possessions; area, 20,000 square miles; population (1914), 3,050,755; capital, Saigon (1915), 100,000; Cholon has 168,100. Rice is the chief product; rubber is cultivated somewhat; a large variety of fruits and vegetables is raised; the cattle industry is extensive. Fishing on the rivers and coast is active. Trade controlled by French and Chinese. Exports are rice, fish and their oil, cotton, copra, pepper, silk, hides; value (1916), $40,268,060; imports, $31,149,740.

Annam lies above Cochin-China, on the east coast of the peninsula; area, 52,100 square miles; population (1914), 5,200,000; capital, Hué, 60,600; largest town, Binh-Dinh, 74,400. Products, rice and other cereals, mulberry, cinnamon, tobacco, sugar, manioc, bamboo and timber, coffee, dye and medicinal plants. Raw silk is a large industry, and extensively manufactured. Cattle-raising is growing. Coal and salt are produced. Imports, cotton goods, tea, oil, paper articles, tobacco; exports, sugar, cotton and silk cloth, rice, cinnamon, tea, paper. Exports (1916), $887,650; imports, $1,165,000.

Cambodia adjoins Cochin-China on the northwest; area, 45,000 square miles; population (1914), 1,634,252; capital, Pnom-Penh, 62,255. Products, rice, tobacco, indigo, pepper, coffee, cinnamon; cotton raising is increasing; cattle-breeding is a large industry; salt is worked. Imports, salt, wines, textiles; exports, salt fish, tobacco, cotton, rice.

Tonking occupies the northern end of the possessions; area, 46,400 square miles; population (1911), 6,119,720; chief town, Hanoi (1915), 150,000, the capital of Indo-China; port, Haiphong. Chief crop, rice; maize, sugar-cane, cotton, coffee, tobacco, fruits are raised. Zinc is mined. Imports, metals, tools and machinery, beverages, cloths; exports, rice, maize, cattle products. Exports (1916), $14,216,400; imports, $9,218,972.

Laos is a southern extension of Tonking; area, 98,000 square miles; population (1914), 640,877; capital, Vien-tiane. Soil of superior quality, producing rice, cotton, indigo, fruits, tobacco; teak-wood is an extensive product. Mineral resources large.

Kwang-Chau-Wan is on the adjacent south coast of China. Latitude 19° north, longitude 110° east; area, 190 square miles;

population, 168,000. Leased from China, and includes two islands in the adjoining bay. Imports, cotton yarns, opium, petroleum; exports, straw sacks, mats, swine.

French Islands:—see Bismarck Archipelago, p. 158.

French Possessions.—The colonial policy of France began in 1626, when part of Guiana was taken, and has persisted throughout the intervening period to the present day. In all, about 4,000,000 square miles of dependent territory, with a population of 44,000,000, are now under French control or ownership. Tabulated by continents, the holdings are as follows:—in America, four colonies contain 33,200 square miles and 459,082 people; in Africa, fourteen regions contain 3,151,024 square miles, with a population of 32,898,518; in Asia, six colonies contain 256,196 square miles and 17,268,728 people; in Australasia (Oceania) two major islands and a number of minor groups embrace 9,150 square miles and 81,200 people. The volume of trade may be judged from these figures, which exclude Algeria and Tunis. Exports from the colonies (1915), $152,309,645; imports, $104,168,750. The following are described under their own names: Algeria, Morocco, Madagascar (including the Mayotte and Comorro Islands).

Africa.—French Sahara includes all the territory west of the Nile basin, practically the whole of the Sahara desert except the subordinate Libyan desert, estimated at 1,544,000 square miles, with a population of only 800,000. Much of it contains only oases and connecting caravan routes. Fruits, oil and seeds are collected and exported. The state of Wadai lies at the southeastern corner of this area, in the Sudan.

French West Africa includes Senegal, French Guinea, Ivory Coast, Dahomey, Upper Senegal-Niger (French Sudan), Mauritania.

Senegal occupies the west coast from 21° 15′ to about 13° 30′ north latitude, merging into Mauritania on the northeast and French Guinea on the southeast; area, 74,000 square miles; population (1915), 1,247,979; capital and port, St. Louis, 22,839 (1916); Dakar is a naval station and seat of government for West Africa (19,808). Soil, sandy; ground-nuts, millet, maize, rice and castor beans are cultivated, and gum and rubber gathered. Ground-nuts are exported, as also hides, skins and rubber. Imports are

cottons, foodstuffs, metal utensils and coal. Exports (1916), $16,458,075; imports, $23,354,165.

French Guinea lies on the west coast, south of Portuguese Guinea; area, about 95,000 square miles; population (1916), 1,808,893. Chief product, rubber; others are palm oil and nuts, millet, gum, coffee, fruits. Cattle are raised on a large scale. Gold is known to occur. Exports, rubber, cattle, ground-nuts, palm kernels. Exports (1916), $3,560,230; imports, $4,041,860.

Ivory Coast occupies the north coast of the Gulf of Guinea, between Liberia and Gold Coast, and stretches north to the French Sudan; area, about 130,000 square miles; population (1916), 1,530,754; seat of government, Bingerville (formerly Adjamé); at Grand Bassan is a good harbor. Maize, plantains, bananas, pine-apples and coffee are cultivated, and cocoanuts gathered. Mahogany occurs inland, and gold. Imports, chiefly cotton goods, tobacco, rice; exports, palm kernels, oil and rubber. Exports (1916), $1,888,410; imports, $2,109,330.

Dahomey stretches inland from the north coast of the Gulf of Guinea, between Togoland and Nigeria, with only 70 miles of coast; area, 39,000 square miles; population (1916), 911,749; seat of government and chief trade center, Porto Novo (20,000). Agriculture is largely developed, maize, manioc, yams and potatoes being raised near the coast; cotton is cultivated somewhat. Imports, chiefly cottons, machinery, liquor, tobacco; exports, maize, palm kernels and oil, copra, kola nuts and rubber. Exports (1916), $3,756,210; imports, $3,476,150.

Upper Senegal-Niger was consolidated in 1904 from Senegambia and Niger. On the north it merges into Sahara, on the south into the colonies on the Guinea coast; on the west into Mauritania, on the east with the Chad region of Sahara. Its divisions include the civil and military Niger Territories; area, 802,000 square miles; population (1916), 6,449,067. Industry primitive, but includes pottery, brick making, weaving and leather. Cattle are raised on a large scale. Rubber is collected; ground-nuts, millet, maize, rice and cotton are cultivated. Imports, chiefly cottons, metal utensils, foodstuffs; exports, cattle, skins, wool, rubber and ground-nuts. Exports (1916), $622,075; imports, $1,301,250.

Mauritania lies northeast of Senegal and east of the Spanish territory of Rio de Oro and Adrar, merging eastward with

Sahara; area, about 345,000 square miles; population, about 600,000, mostly Moors.

French Congo (French Equatorial Africa) lies on the west coast, below the Gulf of Guinea, extending northward from 4° south latitude. It is cut into segments by two intrusions of Kamerun, broadens rapidly northward and merges into the state of Wadai. Its main body is between 2° north and 4° south, and between 8° 30′ and 17° east; area, about 669,000 square miles; population, estimated at 9,000,000; capital, Brazzaville; chief ports, Port Gentil and Libreville. Rubber, palm oil and the produce from caravans are the exports. Exports (1916), $732,657; imports, $926,070.

French Somali Coast, on the Gulf of Aden, East Africa. Latitude 12° 30′–10° 40′ north, longitude 41° 40′–42° 40′ east; area, about 5,790 square miles; population (1910), 208,000; chief port and seat of government, Dibouti. Coast fisheries and inland trade are the chief occupations; salt is mined. Most trade is transit. Imports, mainly cotton goods, galvanized iron, sugar and butter; exports, coffee, ivory, skins and hides. Exports (1916), $10,325,031; imports, $7,847,771.

Réunion (Bourbon) Island lies 420 miles east of Madagascar. Latitude 21° south, longitude 55° 30′ east; area, 970 square miles; population (1912), 173,822; chief towns, St. Denis, 23,972 (1912), St. Pierre, 29,481. Has been a French colony since 1767. Chief products, sugar, rum, coffee, vanilla and spices, tapioca; imports, rice, grain. Exports (1916), $6,632,900; imports, $4,679,413.

St. Paul and Amsterdam Islands, latitude 38° south, longitude 78° east, are uninhabited rocks.

Kerguélen Island, latitude 50° south, longitude 70° east, is a desolate spot, used chiefly as a supply station, especially for antarctic exploration, and as an astronomical station.

America.—St. Pierre and Miquelon are the largest islands of two groups near the south coast of Newfoundland. Latitude 47° north, longitude 56° 20′ west; area, St. Pierre group, 10 square miles, Miquelon group, 83 square miles; population (1911), St. Pierre group, 4,209, Miquelon group, 443. The islands are rocky, and the chief industry cod fishing. Imports, textiles, salt, wine, meat, foodstuffs; exports, cod, fresh and dried, and other fish products. Exports (1915), $1,783,780; imports, $514,765.

Guadeloupe and its dependencies consist of two closely adjacent islands and five smaller islands. Latitude 16° 30′–15° 50′ north, longitude 61° 50′–61° west; area, main islands, 772 square miles, dependencies, 688 square miles. The two main islands are Guadeloupe or Basse-Terre (west), and Grand-Terre to the east. The lesser islands are Marie Galante, Les Saintes, Désirade, St. Barthélemy, and St. Martin. Seat of government, Basse-Terre (8,656); Pointe-à-Pitre (22,604) has a good harbor. Products, sugar, coffee, cacao; many fruits, vegetables and grains are grown for local consumption; parts of the islands forest-clad. Exports (1916), $8,145,680; imports, $4,816,355.

French Guiana is on the northern coast of South America. Latitude 5° 40′–2° north, longitude 55°–51° 30′ west; area, about 32,000 square miles; population (1911), 49,000; capital and only seaport, Cayenne (13,527). Population figures are exclusive of a penal settlement of about 8,300. The 200 miles of coast are high, and harbors almost lacking. Agriculture slight in amount; rice, maize, manioc, cocoa, coffee, sugar, tobacco and indigo are grown, and rubber collected. Gold mining occupies many of the people. Exports are cocoa, woods, hides, gold, phosphates. Value of exports (1915), $2,274,380; imports, $2,085,800.

Martinique, latitude 14° 52′–14° 27′ north, longitude 61° 12′–59° 50 west; area, 385 square miles; population (1916), 193,087; chief trade center, Port de France (26,400). Chief products, sugar and cocoa; lesser crops are tobacco, coffee, cotton. Exports (1916), $12,197,965; imports, $6,770,880.

Asia.—French India consists of five minute colonies, scattered unsystematically through the peninsula:—Pondichéry, latitude 12° north, longitude 80° east, on the east coast south of Madras, population (1916), 168,344; Karikal, latitude 11° north, longitude 80° east, on the coast south of the former, 56,562; Yanaon, latitude 16° 45′ north, longitude 82° 30′ east, northeast of Madras on the coast; Mahé, latitude 11° 30′ north, longitude 75° 30′ east, on the southwest coast; and Chandernagor, latitude 22° 40′ north, longitude 88° 20′ east, a few miles northwest of Calcutta. Ground-nuts, paddy and ragi are grown, and rubber, cotton and jute worked up. Exports (1914, the highest year), $6,860,700; imports, $1,909,130.

Australasia.—New Caledonia, an island of the South Pacific.

Latitude 20°–22° 25′ south, longitude 161° 30′–164° 40′ east; area, 7,600 square miles; population (1911), 50,608. The island is largely mountainous; there is some pasture and some arable land. Chief products, coffee, copra, cotton, manioc, maize, tobacco, bananas, pine-apples; cattle raising extensive; mill industries somewhat developed. Nickel ore and metal are an important product. Imports, coal, flour, rice, wine; exports, minerals, coffee, copra, rubber, guano. Exports (1916), $4,026,035; imports, $3,445,520.

Dependencies of the island are five groups:—Isle of Pines, 30 miles southeast, 58 square miles, population 600; Wallis Archipelago, northeast of Fiji, 40 square miles, population, 4,500; Loyalty Islands, 60 miles east of New Caledonia, 800 square miles, on which cocoanuts and rubber are raised; Huon Islands, 170 miles northwest of New Caledonia, barren; Futuna and Alfi, south of Wallis Archipelago, with 1,500 population.

The New Hebrides Islands are a chain of volcanic peaks. Latitude 13°–20° south, longitude 166°–169° east; area, 5,100 square miles; population, estimated, 70,000. The islands were discovered in 1606 and visited by Cook in 1774. By a treaty ratified in 1906 the islands were placed under the joint control of Great Britain and France. Maize, copra, coffee, bananas, and Kauri wood are exported. Sulphur is abundant.

The Society Islands form an archipelago of the South Pacific. Latitude 16°–18° south, longitude 152°–148° west; area, 637 square miles; population, estimated, 20,000. The islands have been claimed by the French since 1768. Tahiti, the largest and most important island, contains more than half the population of the group; area, 600 square miles; population, 11,700. Papeete, its capital, is a port of call for many vessels in Pacific trade. The natives are among the finest of the Polynesian Malays, but they have suffered much from the vices of Europeans. The chief exports are copra, sugar and rum, which are cleared mainly through the ports of Fiji. Pearls and mother of pearl are important products. Imports are cloths, wheat, flour, metal utensils. Exports of Tahiti (1913), 1,703,590; imports, $1,685,390.

The Paumotu (Paumota, Taumotu or Low) Archipelago is a broad chain of coral stolls in the South Pacific. Latitude 14°–23° south, longitude 150°–131° west; area, about 330 square miles;

population, estimated, 6,000, mainly Malays of the Polynesian type. The number of islands is 78. They became a protectorate of France in 1844, and were formally annexed to the dependency of Tahiti in 1881. Pearls and pearl shell are the only products, and these are marketed at Tahiti.

The Marquesas Islands are a volcanic group in mid-Pacific. Latitude 8°–11° south, longitude 141°–138° west; area, 480 square miles; population, estimated, 3,500. The islands, discovered in 1595, became a French possession about 1842. The administration includes various other islands in the vicinity. They are of strategic value only.

The Leeward Islands lie immediately northwest of the Society Islands, and by some are regarded as a part of that group. The Gambier, Tubuai and Rapa Islands are three small groups near the Tropic of Capricorn, ranging as a whole from 22° to 28° south, and 155° to 135° west. They are of coral origin, and contain altogether a few thousand inhabitants.

French Somali Coast:—see French Possessions; Africa, p. 199.

French West Africa:—see French Possessions; Africa, p. 199.

Friendly Islands:—see Tonga Islands, p. 274.

Funafuti Island:—see Gilbert and Ellice Islands, p. 208.

Futuna Island:—see New Caledonia, p. 243.

Galapagos Islands.—A group of five large and ten small islands crossed by the equator about 600 miles west of Ecuador, to which state they belong; area, estimated, 2,800 square miles; population, estimated, 800, but likely to increase materially from the fact that the islands are in the route between the Panama Canal and Australia. The only commercial products are guano and orchilla moss, from which a purple dye is extracted. These are exported to Europe. A powerful radio-station has been erected on the islands. The giant turtles for which the islands were noted are now few in number.

Gambia and Protectorate:—see British West Africa, p. 173.

Gambier Islands:—see French Possessions; Australasia, p. 202.

Gardner Islands:—see Bismarck Archipelago, p. 158.

Georgia.—An old kingdom of northwestern Trans-Caucasia, which led a separate existence for more than 2,000 years until 1801, when it was incorporated into Russia. It proclaimed its independence of Russia as a republic in January, 1918; and is

expected to be recognized by the Peace Conference, either as a state or as a mandatory of one of the Allied and Associated Powers. The geographical area known as Georgia includes the Russian governments of Tiflis and Kutais, in western Trans-Caucasia. These have a combined area of 24,000 square miles, and a population of about 2,500,000, of which 1,350,000 are Georgians. But in addition, the Georgians occupy adjacent parts of Armenia for some distance west of the Russian boundary. For description of the general nature of the country, see under Armenia and Caucasia. The Georgians comprise the finest of the three great divisions of the Caucasian race. Their country, with some of the best of the Black Sea coast, with several large and fertile valleys, and with its full share of mineral wealth, bids fair to become one of the strongest of the new states of the southeast, arising out of the war.

German East Africa:—see Great Britain, Mandatories of; and Belgium, Mandatory of, pp. 210 and 156.

German New Guinea:—see Australia, Mandatories of, p. 153.

German Possessions (Former).—Previous to the World War, Germany, as part of her imperialistic colonial policy, had acquired in various ways dependent territory aggregating, according to estimate, 1,027,820 square miles, and holding a population of considerably over 12,000,000. This policy of expansion began to bear fruit in 1884, when the first of the territory was taken; and the increase of colonial lands continued until 1909. Of these colonies and protectorates, Africa furnished four—Togoland, Kamerun, Southwest Africa and East Africa, with an area of 931,460 square miles and a population of about 11,500,000. In 1911, 107,270 square miles was added to Kamerun, with a population of 1,000,000; and 6,450 square miles ceded to France. In Asia one area, Kiauchau, was taken, with 200 square miles of land and an equal area of inclosed water; and a population of 168,900. In the Pacific, German New Guinea consisted of Kaiser Wilhelm's Land and six archipelagos, totalling 96,100 square miles, with a population of about 636,000. In addition, German Samoa occupied 1,000 square miles with a population of 35,000.

These colonies were cleverly situated, for purposes of strategy or of trade. In some cases a colony was warped into fantastic shape in order to tap desirable country—as southwest Africa with

its long finger reaching four degrees eastward to tap the Zambezi River, or Kamerun, with two prongs reaching far to the east and south to the Congo. The treatment accorded the natives has not been such as to develop properly the latent strength of the colonies; and, under the direction of the League of Nations, almost limitless economic possibilities lie open for usefulness under the various mandataries.

German Samoa:—see New Zealand, Mandatory of, p. 245.

German Southwest Africa:—see Union of South Africa, Mandatory of, p. 278.

Germany.—A limited monarchy until 1918, now a republic. Latitude 55° 30′ (54° 40′ with Slesvig eliminated)–47° 15′ north, longitude 6°–22° 50′ east, including the detached area in East Prussia. Area, in 1914, 208,780 square miles; the Treaty of Versailles, 1919, takes from Germany outright 29,219 square miles, and leaves the sovereignty of 8,532 square miles to be determined by popular vote. Population (1914), 67,812,000; the same treaty transfers to other nationality, outright or subject to popular vote, 11,362,000; capital, Weimar; other cities—Berlin, 2,071,257 (1910); Hamburg, 831,535; Munich, 596,467; Bremen, 247,437; Nuremberg, 333,142; Breslau, 512,105; Cologne, 516,527; Frankfort-on-Main, 414,576; Hanover, 302,978; Dresden, 548,308; Leipzig, 589,850. The northern half of the republic is a low plain, marshy along the Baltic, and rising gently to the highlands of the southern half; back of the highlands are the Alps, on the southern edge of Germany. The Baltic and North Sea coasts extend for more than 1,000 miles; they they are sandy and low, and offer poor harborage; the Baltic coast, moreover, is far from open sea, necessitating the construction of the Kaiser Wilhelm or Kiel Canal across the neck of the Danish peninsula. The harbors are estuaries or are far up the rivers. Hamburg is one of the greatest ports in the world, and handles half of Germany's foreign trade. Bremen, on the Weser, is the second port; and Stettin and Danzig have been the chief North Sea ports. The last-named, with surrounding land on the delta of the Vistula (729 square miles), is now, by the terms of the Treaty of Versailles, an internationalized port surrounded by Polish territory. The rivers have great importance in transportation; immense sums have been spent on their improvement, and many canals connect them. The Elbe is

navigable clear across Germany. Continental climate prevails in the east and oceanic climate in the west, so that the average temperature of eastern Germany is lower than that of western Germany. About one-fourth of the country is covered with forests, which are carefully conserved, and a tree must be planted for every one cut down. The growth of manufactures has reduced the agricultural population so that less than half the people are now farmers.

Germany does not raise sufficient food for her dense population, in spite of intensive cultivation. The leading crop, in acreage, is rye, followed by hay, oats, potatoes, wheat, barley and beets. The country leads the world in the production of beet sugar, but much of the wheat consumed is imported; the potato crop is large. Potatoes are grown chiefly in the sandy northern plain. The hops and beer of Bavaria are famous. The chief dairy industry is in the north, where cattle are easily fattened and the grasses conduce to the richest quality of milk. North Germany is also most propitious for horse raising. The goat is the poor man's cow, and many thousands are raised in the southern highlands. Sheep have greatly decreased, and immense quantities of wool are imported for the factories. Fishing occupies a large number of men.

Germany, previous to the war, was surpassed only by the United States and Great Britain as an industrial nation. The closest attention was given to perfecting technical processes. The most important industries have been iron and steel, and their manufactures, which are promoted by the great coal-fields of the Ruhr River and Saxony. Textiles are the second largest industry, many towns in Rhineland-Westphalia and in the Chemnitz district of Saxony being spinning and weaving centers. Germany has contained by far the largest fields of coal and lignite (brown coal) worked in continental Europe. The loss of the Sarre field, and of some in Upper Silesia, cripples the country somewhat, but leaves it still strong in this regard. On the other hand, Germany's great steel, ship and munition industries have been based upon an abundance of iron ore as well; the World War could not have continued for a year, but for the Lorraine and Luxemburg ores. Luxemburg trade will turn to France and Belgium; Lorraine is lost, and Germany's industrial future will be profoundly affected

by the changed conditions. Potash is one of the resources of the country and a considerable quantity is exported for fertilizer. Until 1914, the German controlling syndicate held a practical monopoly of the world market. The nation's success in dye-making and selling has been very great. Transportation is abundant and comparatively cheap; the splendid development of waterways supplements the numerous railroads. The imports are enormous quantities of food and raw materials, and the exports are manufactured articles. Race, Germanic, and over 500,000 foreigners, chiefly from other European states. Religion, mainly Lutheran, Roman Catholic and Hebrew. Figures for exports and imports prior to the war are of no value for forecasting future conditions.

Gibraltar:—see British Possessions; Europe, p. 172.

Gilbert and Ellice Islands:—see British Possessions; Australasia, p. 169.

Gilbert Islands:—see Gilbert and Ellice Islands, p. 208.

Gôa:—see Portuguese India, p. 258.

Gold Coast:—see British West Africa, p. 173.

Graham's Land:—see Falkland Islands, p. 193.

Great Britain and Ireland.—Officially, the United Kingdom of Great Britain and Ireland. Latitude 60°–49° north, longitude 11° west–2° east; area, 121,633 square miles; population (1914), estimated, 46,760,000; capital, London (greater city), 7,419,704; principal cities of England—Liverpool, 763,926; Manchester, 731,830; Birmingham, 860,591; Sheffield, 472,234; Leeds, 457,507; Bristol, 361,573; Bradford, 290,642; Kingston-upon-Hull, 287,472; Newcastle-upon-Tyne, 271,523; Nottingham, 264,970; of Scotland, capital, Edinburgh, 326,901; Glasgow, 1,072,793; Dundee, 178,752; Aberdeen, 164,307; of Ireland, capital, Dublin, 400,000; Belfast, 399,000. Total population of England (1914), estimated, 23,382,000; Scotland (1915), 4,785,598; Wales, 1,712,770; Ireland, 4,324,365.

The United Kingdom dates from the Union of the crowns of England and Scotland under James I., in 1603. From 1649 to 1660 the government was practically a republic, styled "The Commonwealth." Since that time the reigning families have been the Houses of Stuart, Stuart-Orange, Stuart, Hanover, and Saxe-Coburg-Gotha. In 1917 a Royal Proclamation changed the name

of the House of King George V to that of Windsor. The British Empire consists of the United Kingdom and the various British possessions. These have an aggregate area of about 12,785,000 square miles, or about one-fourth the land surface of the earth. The estimated population of the empire is 442,000,000. Great Britain consists of England, Scotland and Wales, with the Isle of Man and Channel Islands.

An extensive, undulating and fertile plain covers the south and east of Great Britain. Mountains in the north and west cover two-fifths of the total surface. The mountains of north Scotland are mostly devoid of cultivation. Much of Ireland is an undulating interior plain, with mountain ranges near the sea surrounding it. Most of the plain is very fertile, but one-seventh of Ireland is covered by bog and moor. England has fifty rivers navigable by large or small vessels. The Thames is commercially the most important river in the world, although only 220 miles long. The Clyde excepted, the rivers of Scotland are not of great commercial importance. Ireland has many navigable streams, among which the Shannon is navigable for almost its entire length. In England there are over 2,500 miles of canals. A ship canal connects Manchester with the sea. The climate is oceanic, and mild for so high a latitude. The abundant rainfall is most copious in the west. Severe storms in autumn and winter sometimes do great damage on the coasts.

Not much more than one-fifth of the soil is cultivated, and the islands produce not more than one-fourth enough food to supply the people. The rest must be imported from the colonies and from the United States. Not much wheat is grown, and the warmth is not sufficient for maize. The oat crop is large, and the pasturage is excellent. No other nation has finer breeds of cattle, horses and sheep. Large quantities of dairy products are imported, but cheese of unusual fine quality is exported.

The mineral riches exceed in value the agricultural products. The coal fields, about 4,000 mines, are among Great Britain's most valuable possessions, the yearly output being valued at more than $1,000,000,000. The most important metal is iron, the mines being situated near or among the coal fields. Next to the United States, Great Britain since 1918 has been the foremost producer of iron and steel. Salt is mined somewhat; the tin mines have pro-

duced as many as 15,000 tons of ore in a year, present yield being half that number.

The textile industries are first in the list of manufactures, the greatest centers of the cotton industry being around Manchester, Derby, Nottingham, Glasgow, Paisley and Belfast. About 790,000,000 pounds of wool are absorbed in normal times annually by the woolen industries, and 1,600,000,000 pounds of cotton are turned into manufactures. The silk industry does not meet French competition nor supply the home demand. The metal industries form the second great department of manufactures. Besides steel rails, armor plate and steel for bridges, railroads, ships, etc., machinery is made in thousands of machine shops; hardware and glass, chemicals, leather, and, in fact, all branches of manufacturing are of the highest development.

Great Britain is one of the two leading commercial nations, and its trade is world-wide in the fullest sense. The railroads are solidly constructed, usually with double tracks, and the speed of the trains is the highest in Europe. The country's activities are wonderfully stimulated by enormous capital, invested not only at home but also all over the world. Great Britain's chief buying markets are United States, Australia, British India, Egypt, Italy, Argentine, and Canada. These furnish foodstuffs and raw materials to be manufactured into the wares for which the country is famous. They are also her principal selling markets. The United States furnishes most of the cotton and a considerable amount of wheat and meat.

The English people are mainly of Anglo-Saxon descent. The Scotch, Welsh, and Irish are of Keltic descent, wholly or in part. Religions—Established Church, Scottish Church, Protestant Dissenter, Roman Catholic, Hebrew. Foreign trade (1916–17)—exports, $2,974,306,160; imports, $5,326,280,000.

Great Britain, Mandatories of.—Although a considerable part of the ex-German colonies has been placed within the British Empire as mandatory, Great Britain itself has received only one of large size, and a minute island whose importance is strategic.

German East Africa: Latitude 1°–11° 45′ south, longitude 29° 30′–40° 30′ east; area, 384,000 square miles; coast line, 620 miles; population (1913), 7,680,112, of which 5,336 were white; former capital, Daressalam. The harborage facilities are poor, the

water being shallow, but eight coast towns are used as ports; the chief of these is the capital. German improvements in this colony were many, and resistance to its complete subjugation by the Allies lasted throughout the war. The topography is such that a wide range of vegetable products occurs, and culture, under German stimulus, has proceeded far. Several agricultural experiment stations are in operation. Cattle-raising flourishes. A number of mineral deposits are known, but prospecting has not been thorough. The Germans had very detailed and accurate maps of the protectorate, which doubtless will be available for their successors. Chief imports are cotton, rice, foodstuffs, hardware; exports, rubber, ivory, copra, coffee, sisal, wax. Trade has been chiefly with Germany and Zanzibar. Exports (1913), $8,887,760; imports, $13,339,625.

Belgium has become the mandatory for a small area at the northwest corner, which does not, however, lessen materially the size or importance of this addition to the Cape to Cairo railway route.

To Great Britain have been allotted two small areas in western Africa. One is a narrow strip along the northwest side of the Cameroons, adjacent to Nigeria; the other is a similar strip on the west side of Togoland, adjacent to Gold Coast and Ashanti. The remainder of these two ex-German colonies are mandatories under France, and are thus described.

Nauru, or Pleasant Island. Latitude 0° 45′ south, longitude 166° 50′ east; south of the Marshall Islands, and by some regarded as a part of that group; west of the Gilbert Islands, and nearer to them. Formerly a guano center; now valuable chiefly on account of a powerful radio station erected by the Germans.

Great Elobey Island:—see Spanish Guiana, p. 269.

Greece.—A limited monarchy. Latitude (1914) 39° 50′–35° 50′ north, longitude 19° 20′–26° 10′ east; area (1914), 41,933 square miles; population (1914), estimated, 4,821,300; capital, Athens (1907), 167,479; other cities—Saloniki (1915), 157,889; Piræus, port of Athens (1907), 73,579. The kingdom includes many islands of the Ægean and Ionian seas. Greece has two main divisions, northern Greece and the Morea, connected only by the narrow isthmus of Corinth. Both parts are occupied largely by mountains and hills, the only considerable plain being that of

Thessaly, in the north. The mountains are barren, the islands and plains are fertile. The rivers are short coast streams, and Greece is not richly supplied with water. The irregularity of the coast line affords good harbors. The coasts and islands have a mild climate, but the inland regions suffer from extremes of heat and cold. About one-fifth of the area is cultivable. Agriculture is backward, and does not produce sufficient foodstuffs for home consumption. The best farming region is the highly fertile plain of Thessaly, from which considerable wheat is derived. Barley, maize, and rice are important crops. Tobacco is extensively grown, and a large part of the Egyptian cigarettes are made from the tobacco of Greece. Stock raising is insignificant, sheep and goats take the place of cows, and much cheese is made from sheep's milk. Rapid deforestation is injuring the country. Lead, iron and magnesite are mined. The household industries are most important, but cotton and woolen cloths are produced in a number of towns. Zante and the neighboring region grow the small grapes commercially known as Zante currants. Communication is poor and insufficient. Races:—the Greeks are descended from the ancient Greeks, with Illyrian and other admixtures; Albanians, Wallachians, Armenians, Turks, etc. Religion, mainly Greek Orthodox. The chief imports are agricultural products, crude minerals, yarns, chemicals, papers and books, forest products; the exports are agricultural products, raw minerals, wines, animal products, olive and other oils. Exports (1916), $20,433,280; imports, $45,705,000.

Should Thrace and the Adrianople region be given to Greece by the Peace Conference, it will extend the country to 39° 50′–35° 50′ north latitude and 19° 20′–28° east longitude. It will add an area of approximately 9,300 square miles to the country, will give control of the gateway to Constantinople, and will give an outlook on the Black Sea as well as extending greatly the Ægean coastal length. The added territory is exceedingly valuable, but the population is so mixed as to be difficult to govern. It is probable that a small portion of southern Albania, inhabited by Greeks, may be transferred to Greek ownership. In addition, Greece secures a considerable area (possibly as much as 25,800 square miles) in western Asia Minor, of which Smyrna is a center, and which is inhabited largely by Greeks. This is not a mandatory, but is to become an integral part of Greece itself.

Grand-Terre Island:—see Guadeloupe, p. 213.

Greenland (see also Danish Possessions).—The largest island of the world. Latitude 83°–60° north, longitude 78°–10° west; area (estimated), 512,000 square miles; population (1911), 13,500; largest settlement, Sydproven (1911), 766. There were Norse settlements in the tenth century. The settlement at East Bygd, near Julcanshaab, contained a cathedral and several churches. The ruins of an old church at Kakortok, built in the twelfth century, are still standing. The settlement disappeared early in the sixteenth century. The trade of Greeland has been a Danish crown monopoly since 1774. The inhabited parts of the west and east coast are occupied by Denmark as far as 74° north latitude on the west and 67° north latitude on the east coast. The population, Danes and Eskimos, live mainly on the Danish west coast; a few hundred on the east coast, and a few hundred also in northwest Greenland between Cape York and Etah. The interior is covered by an ice-cap reaching an altitude of 12,000 feet; the coasts are mountainous, with deep fiords, and many glacial tongues move down them from the inland ice. The ends of the glaciers at the sea edge break off as icebergs, which float southward to the tracks of trans-Atlantic steamers. The coast vegetation is scanty, chiefly mosses and lichens, with here and there patches of grass. The few stunted trees in south Greenland rarely grow higher than a man's head. The chief animals are the musk-ox, reindeer, arctic fox and polar bear. The coast waters are frequented by seals, walruses, fish, whales and countless numbers of eider ducks and other birds. The natives struggle hard to gain a livelihood. Seal blubber is transformed into train oil, and seal, polar bear and white fox skins, eider down and a little whalebone are collected. Coal is found, but the only mineral of importance yet worked is cryolite, the mines at Ivigtut being the only known deposits of commercial importance. This mineral was formerly much used in the manufacture of the metal aluminium. Danish trading stations supply the Eskimos with commodities in exchange for the collection of skins and blubber products.

Grenada:—see British West Indies, p. 174.

Grenadines Islands:—see British West Indies, p. 174.

Guadeloupe:—see French Possessions; America, p. 201.

Guam:—see United States, Outlying Territories, p. 285.

Guatemala.—A republic of Central America. Latitude 17° 45′–13° 45′ north, longitude 92° 15′–88° 15′ west; area, estimated, 48,300 square miles; population (1914), estimated, 2,000,000; capital, Guatemala (1910), estimated, 90,000 (an earthquake in 1917 completely destroyed the city); other cities, Coban, 31,000; Quezaltenango, 29,000. A Spanish possession from 1522 to 1821; a Mexican possession from 1821 to 1847, when it became a republic. Guatemala has larger business relations with the rest of the world than any other Central American republic. Most of the country is an elevated plateau, with a broad frontage on the Pacific and a very short Atlantic coast line. Maize and black beans, the chief food staples in Central America, are grown everywhere. Coffee, the great export crop, thrives from the Pacific to the center of the republic. Sugar made from sugar-cane is consumed at home, but little is exported. Cotton-fields and sheep pastures on the higher lands supply fiber for spinners and weavers, and cattle scattered over the plateaus yield hides for export. Most of the commodities required by the people, except textiles and flour, are the products of home industry. There are more than 500 miles of railway. A section of the proposed Pan-American railway skirts the Pacific coast. A transcontinental railway passing through Guatemala connects the Pacific port, San José, and the Atlantic port, Puerto Barrios. Coffee, bananas, sugar, hides and cabinet woods are the chief exports; imports are cotton, foodstuffs, linen, hemp and jute. Races, Spanish-American and Indian. Religion, Roman Catholic. Exports (1916), $10,637,855; imports, $6,725,600.

Guiana.—The native name of a region in the northern part of South America. Latitude 8° 30′–1° 30′ north; longitude 61° 30′–51° 30′ west. Physiographically the area extends into Brazil. Guiana was sighted in 1498 by Columbus, when he discovered Trinidad. Guiana is composed of three colonies—British, Dutch (Surinam), and French. The first two are characterized by a low, hot, fertile coastal plain, occupied by most of the population. The third has highland at or near the coast. All the countries are comparatively undeveloped. For detailed description, see the various subdivisions.

Hadramaut:—see Nejed, p. 239.

Haiti.—A Negro republic occupying the western part of the

island of Haiti, one of the largest of the West Indies. Latitude 20° 15′–17° 30′ north, longitude 74° 30′–71° 30′ west; area, estimated, 10,204 square miles; population (1912), estimated, 2,500,000; capital, Port au Prince, esitmated, 100,000; other cities—Cape Haiti, 30,000; Gonaïves, 13,000. A French colony founded about 1697, and proclaimed a republic 1804. The surface is mountainous; the highways are poor. Most of the traffic is carried by sea routes. A railway from Port au Prince to Cape Haiti is under construction. Other short lines are in operation. The climate is tropical, but is tempered by sea winds. Coffee is the chief product and export, and is superior in quality; but little attention is paid to its cultivation, as a heavy export duty hinders the producers. The coarse cotton textiles, breadstuffs and kerosene, which form most of the imports, are largely supplied by the United States. Coffee, cotton, cocoa, and logwood are the chief exports. Race, French-speaking Negroes. Religion, Roman Catholic. Exports (1915-16), $1,837,744; imports, $1,925,255.

Hasa, El:—see Nejed, p. 239.

Hawaii.—Or the Hawaiian Islands. A chain of volcanic islands in the Pacific Ocean, mainly between latitude 23°–18° north, longitude 161°–154° west; area, 6,449 square miles, Hawaii 4,015, Lunai 139, Nühau 97, Maui 728, Oahu 598, Kauai 547, Molokai 261; population (1917), estimated, 250,627; capital, Honolulu, Island of Oahu (1917), estimated, 71,950. The first mention of the islands in modern history occurs in 1528, when two vessels of Alvaro de Saavedra were shipwrecked there. Juan Gaetan visited them in the middle of the sixteenth century, and in 1778 Captain Cook visited them and named them after the Earl of Sandwich. In 1893 the reigning queen was deposed and a provisional government formed; in 1894 a republic was proclaimed; in 1898 they were annexed to the United States, and in 1900 they were organized as a territory. There are eleven islands, eight of which are inhabited. The islands are separated from one another by ocean channels varying in width from 6 to 61 miles. Small as they are, they embrace about as much territory as all the rest of Polynesia. Oahu, the most populous and important commercially, is as large as the Society group. Maui has about the same area as the Marquesas group; and the island of Hawaii, with the remaining islands, is nearly as large as all the other groups of Polynesia.

Hawaii is at the cross-roads of the Pacific, where vessels in the American-Japanese and American-Australian trade put into port. The group is also the starting-point for expeditions to Bering Strait and the South Sea. The geographical position of Hawaii in the central Pacific thus attracts much shipping. The group is purely volcanic, rising abruptly from deep water, and containing the loftiest summits of any oceanic islands. Mauna Loa and Mauna Kea, in Hawaii are over 14,000 feet. The volcanic forces are extinct in the west, but very active in the east. Below the mountains are fertile plains and valleys. All the soils are derived from lavas. Sedimentary soils, covering the levels bordering the sea, are very deep and rich. The dark red soils are immediately above the sedimentary flats and lowlands, and have high fertility. The light red soils on the uplands, near the mountains, are of small depth and less fertile. The climate is about ten degrees cooler than that of any other land in the same latitude. The windward side of the mountains has abundant rain, but there is much less on the leeward side, where most of the plantations are situated. The islands are wholly dependent upon agriculture. Cane-sugar employs most of the capital and labor, furnishes most of the exports, and maintains most of the people. Nearly all the plantations have their own mills and manufacture all the raw sugar produced from their cane. The sugar product reached a total of 640,800 tons in 1917; the yield of sugar per acre is from 6,000 to over 9,000 pounds. Rice, growing on the lowest flats and close to the sea, has second place. The rice-growers are almost wholly Chinese. The coffee berry grows wild and is cultivated on the four larger islands, but the production as yet is comparatively small. Chinese gardeners supply Honolulu with nearly all its vegetables. Bananas and pineapples are the only fruits figuring in the exports. The forest areas are considerable, but have suffered great reduction; forty government forest reserves are now in existence. Sufficient cattle are maintained for beef and milk. Most of the plantation labor is supplied by Chinese, Japanese, and Portuguese. The native Hawaiians prefer to work for themselves rather than to take service with employers, and the Portuguese immigrants, energetic and thrifty people, are mostly engaged in horticulture. American capital finances the planting and commercial interests. About three-fourths of the imports come

from the United States. Raw sugar is the chief export. Hawaiian pineapples and pineapple products find their way to nearly every country in the world. Practically all the raw sugar has gone hitherto to the California refineries. Exports (1916-17), $75,115,983; imports, $46,358,341.

Hejaz.—A kingdom of Arabia, formerly, like other parts of Arabia, tributary to Turkey; won its freedom and recognition by the splendid work of the armies under the King of Hejaz, co-operating with the Allies in campaigns in western Asia. It is one of the four new countries permitted to be signatory to the German peace treaty of 1919. The province formerly extended from the head of the Gulf of Akaba to Asir, on the south, and back from the Red Sea for a distance of 100–200 miles. The dimensions and area of the new country are unknown, for it is likely to include Asir and Yemen on the south, and may attempt to extend its dominion over the nomadic Arabs of the great central desert. The area of the old divisions of Hejaz and Yemen is 170,000 square miles; population, 1,050,000. For description of the nature of the country, see Arabia.

Hermit Islands:—see Bismarck Archipelago, p. 158.

Hervey Islands:—see Cook Islands, p. 184.

Honduras.—A republic of Central America. Latitude 16° 30′–13° north, longitude 89° 30′–83° west; area, estimated, 44,275 square miles; population (1914), estimated, 562,000; capital, Tegucigalpa, (28,950); Pacific port, Amapala, estimated, 4,000; Atlantic ports, Puerto Cortez (or Caballos), estimated, 2,500, and Trujillo, estimated, 4,000. Columbus landed on the American continent first at Cape Honduras, 1502; first settlement by Cortez, 1524; the region became an independent republic in 1821; a constitutional government was formed in 1894. Honduras is second in size of the Central American republics; but, although rich in resources, has little commercial development. The population cannot supply sufficient labor for so large an area, transportation facilities are very poor, and full half of the country is still in a virgin state. The interior plateau maintains many cattle; hides and live animals are important exports. The long Caribbean coast produces bananas and other fruit for United States consumption, and the Atlantic forests abound with fine tropical timber. Honduras "mahogany," which is not mahogany at all, is a beautiful

cabinet wood. Gold and silver are exported, although mining development is small. Cocoanuts and rubber also are exported. The United States supplies a large part of the imports, in which textiles and hardware are prominent. The Atlantic ports have regular steamship connection with the United States. The Pacific coast, only forty miles long, has the fine natural harbor of Amapala, from which the metals are shipped. Races, Spanish-American and Indians; language, Spanish. Religion, Roman Catholic. Exports (1916-17), $5,353,450; imports, $6,193,160.

Hong Kong:—see British Possessions; Asia, p. 165.

Howland Island:—see Phoenix Islands, p. 254.

Hungary.—Sometimes known as the Magyar Republic. It is difficult to tell how much is left of Hungary; but it is to embrace the country dominantly Magyar. The western boundary should be approximately the old political one with Austria, beginning with longitude 16° east; the eastern end is likely to run to longitude 22° 15′; the border with Czecho-Slovakia is about latitude 49° 30′ north, while that with Jugoslavia will not go below 45° 45′. The area is impossible to compute, owing to uncertainty as to how much of old Hungary is lost to other states. It may be no more than one-third of Hungary proper in 1914, or 36,000 square miles, with a population of some 6,000,000. The part of Hungary left to the new republic contains most of the finest agricultural land of the great Hungarian plain, and agriculture is certain to be the chief occupation of the people. Wheat, rye, barley, oats, maize, apples, plums, tobacco, wine and beet-sugar are the most important products. Animal-raising is a large industry. Chief city and present capital, Budapest, 880,000 (1910). The country will be prepared to export large amounts of livestock and cereals, and will import chiefly cotton and its goods, machinery, wool and woolens, iron and its wares, leather.

Huon Islands:—see New Caledonia, p. 243.

Iceland.—Latitude 66° 33′–63° 12′ north, longitude 24° 35′–13° 22′ west; area, 40,437 square miles; population, estimated, 93,000. Iceland is one of the newest of sovereign nations, its independence dating from December 1, 1918, with the full consent of Denmark, whose dependency it had been since 1380. It has the distinction, too, of having been the first modern republic, this form of government obtaining for nearly 400 years, ending in 1264 by

union with Norway. The present form of government is that of a limited monarchy, in close affiliation with Denmark. Capital and chief town, Reykjavik (about 7,000). The raising of cattle, especially sheep, and fishing are the sole industries. All cereal foodstuffs must be imported. Imports are, in addition, liquor, tobacco, metal utensils, timber, salt, coal; exports, sheep, horses, salt meat, wool and hides, fish, eiderdown, and woolen goods. Trade is largely with Denmark and Great Britain. Exports and imports, about $2,900,000 and $2,500,000 respectively. The Danish colony in Greenland occupies 46,740 square miles and has a population of 12,000 (see Greenland).

Isle of France:—see Mauritius, p. 235.

India.—All that part of southern Asia under British law. Latitude 37°–6° north, longitude 61°–101° east; area, British Provinces, 1,093,074 square miles, including feudatory states 1,802,629 square miles; population (1916-17) 224,267,000 and 315,156,400, respectively; capital, Calcutta (1911), 1,222,313; other cities—Bombay, chief west coast port, 979,445; Madras, eastern port, 518,660; Haiderábad, 500,623; Rangoon, 293,316; Lucknow, 259,798; Delhi, 232,837; Lahore, 228,687; Ahmedábad, 216,777; Benares, 203,804. British India proper does not include the semi-independent states. The history of India extends back for about five thousand years. The Buddhist period furnishes authentic records at least 500 B.C. The invasion by Alexander the Great occurred 327 B.C.; there were Portuguese settlements in Hindustan in 1500 A.D. The Dutch expelled the Portuguese; the discovery of the all-water route around Cape of Good Hope opened the way to English occupation, and the formation of the East India Company. Under Lord Clive, the English occupation gradually covered all of Hindustan. The formation of the Empire of India was celebrated by coronation ceremonies in 1903. Executive authority is vested in the Viceroy, appointed by the crown. India has three distinctly defined physical regions: the Himalaya Mountain district, the North Indian Plain, and the Plateau of the Deccan. The colossal ranges of the Himalayas stretch for 1,500 miles along the north wall of the country, dividing India from the plateau of central Asia. South of the Himalayas is the great North Indian Plain, well watered and for the most part well cultivated. East of the Indus delta, however, is the Thar Desert, which stretches

away almost to the base of the Himalayas. The triangular plateau of the Deccan, from 1,600 to 3,000 feet high, occupies the south of the country. India has great rivers, but the only very important ones for navigation are the smoothly flowing Ganges, Bramaputra, Indus, and the Irawadi of Burma. The streams of the Deccan are too impetuous for convenient navigation.

India has many kinds of climate; but all, except regions high among the Himalayas or in favored parts of the Deccan, may be called more or less tropical. Only two seasons are recognized—the dry and the rainy season. The southwest monsoon in summer brings an enormous quantity of water vapor, with which it drenches the Western Ghats, and usually has enough left for the interior highlands; but sometimes this monsoon does not continue long enough to give the Plateau of the Deccan sufficient rain. Then crops fail, and a famine may ensue resulting in the death of many thousands. Many millions of the inhabitants, being Brahmans, are strict vegetarians, and mortality among them in time of famine is increased by the fact that they will not kill their domestic animals for food. The British authorities have inaugurated an elaborate system of public works, by laboring on which the natives can earn money when the wet monsoons fail, and thus buy the food which the government has stored for such occasions.

More than 70 per cent. of the people are engaged in pasturage or agriculture. Their methods are primitive for the most part. Fertilizers are little used, but great irrigation systems have been developed in large districts. Rice, the principal food, can be cultivated only in well-watered regions such as Bengal, the coasts of the Deccan and the valleys. Wheat is sown chiefly in the drier northwestern part, mainly the Punjab; and, although it is an uncertain crop, it is often raised in enormous quantities, a great part of the crop being sent to Europe. Next in importance are the fiber crops. India sends a great deal of cotton to China and Japan, in addition to the supply consumed in its own manufactures. In 1917 the weave of cotton cloth was 377,350,000 pounds. The fiber is shorter than American cotton, and is inferior in quality. Jute, cultivated in the damp warm climate of Bengal, holds second rank among the fibers. The teas of India and Ceylon have made great inroads into the Chinese tea trade of the British Empire, and are

invading many other markets. Animal raising is not important; cows give very little milk, but zebus, an Indian variety of cattle, are used for draft purposes. The mineral production is relatively small, but increasing; in order of output the chief varieties are gold, coal, petroleum, manganese, salt. Little else is done to develop India's mineral wealth. India has been famous for centuries for its shawls, rugs, carpets, and textile fabrics. In recent years modern manufactures, such as tanneries, ship-yards, and iron foundries, have been built. The home supply of manufactures is still inadequate, and an enormous quantity of them is imported. Imports are chiefly from the United Kingdom, China and Hong Kong, Java, Borneo and Sumatra, and the United States; exports go mainly to the United Kingdom, United States, Japan, France, Ceylon. There are more than 205,000 miles of roads, and 36,000 miles of railways; in several large areas, the canals add greatly to the facilities for inland traffic. Religions, Brahman, Muhammadan, nature worship, Buddhist, Christian, Sikh. Exports (1916-17), $831,550,000; imports, $662,495,000.

Baluchistan is a country consisting of several native states bordering British India on the west, and regarded as a dependency of it. Latitude 30°–25° north, longitude 61°–69° 30′ east; area, about 135,638 square miles; population (1911), estimated, 835,000; capital, Kalat; principal port, Gwador. The various petty states of the country have been in existence since the fifteenth century. The Khem of Kalat is the head of a confederacy of chiefs, who administer internal affairs. Since 1876 a British Resident Agent has shaped foreign relations.

The country is chiefly barren mountains, deserts, and sandy plains; its climate is dry, with great extremes of temperature. Agriculture is practiced wherever water is sufficient; wheat, barley, rice, maize, potatoes, and many fruits, of which the dates are famous. Useful minerals are considerable in number and value, but little worked. The commerce is insignificant. Dates and dried fish are exported to India. Baluchistan rugs are prized in every part of the United States and Europe. Most of the trade is with India.

British Baluchistan is included within British Indian territory. It is occupied by troops and fortified for the protection of India. A branch of the Sind-Pishin Railway extends from the

Indus River to Kandahar, Afghanistan. Quetta is the seat of government.

The Baluchs are a warlike Semitic people of Arab descent. The religion is that of Islam.

Sikkim is an Indian state in the Himalayas, a dependency of India. Latitude 28° north, longitude 89° east; area, 2,818 square miles; population (1911), 87,920. The country produces rice, maize, and fruits, and manufactures woolen cloths. A few copper properties are worked. The chief imports are cotton goods, oils, provisions, salt, silk cloth, sugar, tobacco, tea, rice; exports are grains, vegetables, hides, raw wool, lumber. The country is strategically important, for the principal trade route from Bengal to Tibet must traverse its valleys. Trade is with India.

The Andaman Islands form a group in the Bay of Bengal, 120 miles west of Burma; area, 2,260 square miles; inhabited by savages of the Negrito type, and convicts from India; population, about 17,000. The islands are a dependency of British India. Their chief importance is as a meteorological station for the vast Indian Ocean shipping.

The Nicobar Islands are a group in the Bay of Bengal, south of the Andamans, 120 miles west of Malay Peninsula; area, 635 square miles; population, about 9,000, mainly Malays. The commerce of cocoanuts has been the support of the islands for 1,500 years. The climate is tropical, and on the whole unhealthful for whites.

The Laccadive Islands are a group lying 200 miles southwest of Hindustan; population, about 10,600 of mixed Hindu and Arab descent. The preparation and commerce of coir, the fiber of the cocoanut husk, is the industry that brings the islands in touch with the rest of the world.

Ireland:—see Great Britain and Ireland, p. 208.

Isle of Pines:—see New Caledonia, p. 243.

Italian Possessions.—Eritrea is a colony of Italy, on the west coast of the Red Sea. Latitude 18°–12° 30′ north; longitude 36°–43° east; area, 42,800 square miles; population, estimated, 450,000, mostly nomadic. Seat of government, Asmara. Climate, semi-arid to arid, the effects of which are in part overcome by irrigation. Domestic animals are common, their produce supplying local trade, but as an industry the raising of animals is little developed.

Pearl fishing provides a considerable income. Palm nuts and gold form part of the exports. Chief port, Massawah. Exports (1915, the largest year), $2,800,000; imports, $4,720,000.

Italian Somaliland is a colony and protectorate on the east coast of Africa. Latitude 12° north–0° 15′ south, longitude 42°–51° 30′ east; area, 139,430 square miles; population, 450,000; capital, Mogadisho (13,000). Cattle raising and agriculture occupy the people. Imports are yarn, timber, petroleum, rice, sugar, cotton goods; exports, butter, cotton, hides, dura. Exports are chiefly to Italy, Aden and Zanzibar; thence often to United States and Europe. Exports (1916), $1,460,000; imports, $1,520,000.

Tripoli was Turkish from the sixteenth century until 1911, when it was annexed to Italy, the transfer being ratified by treaty in October, 1912. For governmental purposes the country is divided into Tripolitania and Cyranaica, with capitals at Tripoli (73,000) and Benghazi (35,000); the whole region is often referred to as Libia Italiana. Latitude 33° 15′–22° 15′ north; longitude 9°–25° east; area, 406,000 square miles; population, estimated, 529,000. Tripolitania is divisible into four zones, each with its own topography, climate and activities. In the various parts are cultivated palms, olive and fruit trees, cereals, esparto grass, grapes and almonds. Cyranaica produces olives and bananas; it could well be developed as a cattle country. Ostrich feathers in large quantities pass through from the interior, for Paris and London. Sponge fishing is a large coastal industry. Exports (1915, the highest year), $1,060,305; imports, $10,023,650.

The Italian concession of Tiensin, China, lies on the left bank of the Peiho River, with an area of three-tenths of a square mile; population, 10,017 (1915). Latitude 39° 15′ north, longitude 117° 15′ east. It is of little direct economic importance, having only a strategic value.

Italian Somaliland:—see Italian Possessions, p. 222.

Italy.—A limited monarchy of Mediterranean Europe. Latitude 46° 40′ (1914)–36° 40′, territory in the Trentino regained by treaty in 1919 raising the upper boundary to about 47° 15′; longitude 6° 15′–18° 40′ east; area, 110,632 square miles (1914); population (1915), estimated, 36,120,118. The additions by the Treaty of Versailles between the Allied and Associated Powers and Austria comprise a large area in the Trentino ("Italia Irridenta"),

north of old Italy, the head of the Adriatic, Istria and much of the Dalmatian coast and islands. In addition Italy has received from Turkey a sphere of influence on the south coast of Asia Minor extending from the end of the new Greek territory of Smyrna eastward nearly to Alexandretta. The area and population are not estimated; capital, Rome, population (1915), 590,960; other cities—Naples, 697,917; Milan, 663,059; Turin, 451,994; Palermo, 345,391; Genoa, 300,139; Florence, 242,147; Venice, 168,-038. The northern part of Italy is continental and the southern part consists of a peninsula and a number of islands, including Sicily, Sardinia and Elba. The continental portion is the fertile plain of the Po River—historically the plains of Lombardy; it is the scene of Italy's greatest industrial and agricultural activity. The Apennines are the backbone of the peninsula. Most of the peninsula is well watered, but it has no large rivers. Much of the farm land is held in large estates, and leased in parcels to the peasants. Wheat is the chief crop, and much of it is used with Black Sea imports in preparing macaroni, of which Italy makes enormous quantities. The vine crops are close in value to wheat; the best qualities come from the south. Potatoes and maize are large crops, and beet sugar making is very extensive. Italy is the foremost country in Europe in the growing of rice. The production of raw silk is the largest in Europe. Most of the mulberry trees feeding the silkworms are on the Lombardy plains. Raw silk is sent to all the leading nations, silk manufactures being of much smaller importance.

Italy is rich in some useful minerals, but very poor in coal, so that a great deal must be imported. The sulphur mines of Sicily supply much of the world's demand. Salt is obtained from mines or by evaporating sea-water. Iron ore is obtained chiefly from Elba, but most of it is exported, as there is little development of iron manufactures. The famous marbles of Carrara and Massa find a wide market. Because of the lack of coal, manufacturing enterprises are growing slowly. The chief industries are mining, metal making and construction work, textiles and agriculture. Imports, chiefly wheat, coal and coke, raw cotton, wool and woolen goods; exports, raw silk, cotton goods, silk goods. Trade is mainly with United States, Great Britain, Argentina, France. Exports (1916), $617,665,955; imports, $1,678,035,215. Races, Italian, a branch of the Latin family. Religion, mainly Roman Catholic.

Ivory Coast:—see French Possessions; Africa, p. 199.

Jamaica.—The largest colony of Great Britain in the West Indies. Latitude 18° 30′–17° 45′ north; longitude 78° 30′–75° 45′ west; area, 4,207 square miles; Turks and Caicos Islands, 224 square miles; population (1916), 906,000; Turks and Caicos Islands, 6,000; capital, Kingston (1911), 57,379; other towns—Spanish Town, 7,119; Port Antonio, 7,074; Montego Bay, 6,616. Jamaica was acquired by conquest in 1655, and its possession was confirmed by a treaty with Spain in 1670. Included in its administrative jurisdiction are Turks, Caicos and Cayman Islands, and Morant and Pedro Cays. A mountain range forms the axis of the island, extending through it from east to west, the highest peak rising to 7,400 feet. The climate although tropical is pleasant, and the island has become an attractive resort. The climate of the highlands is materially cooler than that of the coast lowlands. All tropical productions are grown to perfection. The sugar plantations were once famous, but many planters have abandoned the industry. Fruits, chiefly bananas and oranges, now form nearly half the exports. Coffee, rum, sugar, cocoanuts, logwood and extract, cocoa and Jamaica ginger are also important. The highways are good. Railways connect Kingston with Port Antonio and Montego Bay. Races, Negro, mixed breeds, white, and East Indians. Trade is chiefly with United States and Great Britain. Exports (1916), $14,105,000; imports, $15,555,000.

Turks and Caicos Islands have considerable foreign commerce of their own. Salt-raking is the chief industry.

Japan.—An island empire, sometimes called the Great Britain of Asia. Latitude, including all dependent islands, 51°–22° north, longitude 120°–157° east; area, 260,738 square miles; population (1916), 76,684,558; capital, Tokio (1917), 2,244,796; Osaka, 1,460,218; Kioto, 539,153; Nagoya, 389,272; Kobé, 498,317; Yokohama, 428,663; Hiroshima, 167,400; Nagasaki, 136,800. International events have placed Japan in the first rank among nations. In the peace settlement between Japan and Russia, 1905, of the contentions that caused the war with Russia, Japan gained the half of Sakhalin Island from the 50th parallel south, and a suzerainty over Korea, which was annexed in 1910. In the war with China the island of Formosa was gained. In China the concessions gave to Japan practical control over the railways in Manchuria. In the

war against Germany, Japan gained concessions in the Shantung peninsula, and all the German insular possessions of Germany in Oceania, north of the equator.

The empire consists of four large islands and a great number (nearly 4,000) of smaller ones. The islands are mountainous, and a few volcanic summits, such as Fujiyama, reach a height of 12,000 feet or more. The narrow plains along the coasts and the fertile valleys among the mountains are the sources of wealth. There are no great rivers, but numerous mountain torrents pour down the slopes with short but rapid courses to the sea. An extensive system of canals provides irrigation that supplements the rainfall. The climate is moist, and is cooler than that of countries of the same latitude on the west coasts of Europe or North America. Violent volcanic outbursts sometimes occur, and the country is liable to disastrous earthquakes. A destructive calamity of this nature, the Nagoya-Gifu earthquake of 1891, killed nearly 10,000 people and destroyed 130,000 houses.

Agriculture is the principal occupation, and is carried on with painstaking minuteness. Large areas in the mountain regions cannot be tilled, but many mountains are cleared of forest and cultivated to their very tops; in places the bare rocks are covered with soil brought from a distance. All the lands belong to the state, and are leased to the farmers, who pay a land tax. The chief crop is rice. A large part of the crop is exported and a cheaper grain is imported for home use. The various cereals and vegetables are grown. Cotton is raised in the south. The mulberry thrives, and the largest island produces a large supply of raw silk. Tea, an important export crop, is grown extensively in the southern islands. The United States buys great quantities of Japanese tea. The most important members of the animal kingdom are silkworms, bees and poultry. The mineral wealth is only moderately large, although coal is mined in Yezo and Kiusiu, and copper, gold and kerosene are produced in quantity. Japan has the largest copper mines of Asia, copper being the only metal exported. Iron, steel and their products are large imports. The empire abounds in the clays that are the basis of its famous earthenware industries.

Modern manufactures have had wonderful development in the past forty years. The Japanese were quick to see the advantages

of western methods, and have applied them with great skill. Many of their products, however, are not equal in quality to those they imitate. Their manufactures are in great variety, and not a few of them supply the home need. So many of the people have been diverted from farming to other industries that, in late years, the cost of living has considerably increased. Among the best industrial products are steamships and steam engines, cotton and silk goods. Milk and vegetables are preserved for export. The internal trade is facilitated by post-offices, excellent highways, 7,500 miles of railroad, and 34,000 miles of telegraph and telephone lines. Most of the foreign trade passes through the port of Yokohama. Kobé is the second largest port. Silk, raw and manufactured cotton goods, copper, plaiting-straw, coal, sugar, matches and tea are the chief exports. The chief imports are raw cotton, iron and steel, oil cake, wool, machinery. Imports (1916) are from United States, China, British India, chiefly; exports go to United States, China, Asiatic Russia, Great Britain. Races, Japanese and about 15,000 foreigners. Religions, chiefly Shintoism and Buddhism. Exports (1917), $80,150,000; imports, $51,789,000.

Japanese Possessions.—Korea, or Chosen, Japan's largest outlying possession, is described separately.

Formosa (Taiwan) is an island belonging to Japan, 90 miles southeast of China. Latitude 25° 15′–22° north, longitude 120°–122° east; area, 13,944; population (1916), 3,710,848, mainly Chinese, including 50,000 Japanese; principal city, Taihoku, 102,-250, including 6,000 Japanese. The island was settled long before the sixteenth century, at the date when its authentic history begins. It was acquired by Japan at the close of the war with China in 1895. Gold and coal are abundant. Tea is grown for export, most of which is marketed at Amoy, China. Camphor, a government monopoly, is the product which chiefly connects Formosa with the rest of the world. Additional products are sugar, tobacco, oil, iron-work, flour, glass, bricks, soap. A railway extends from north to south through the island. Commerce is chiefly with Japan, China and United States. Exports (1916), $61,086,140; imports, $32,477,330.

The Pescadores Islands (or Hokoto) are about twelve in number, with a total area of 50 square miles, and lying a short distance west of Formosa.

Sakhalin is a mountainous island off the coast of Siberia, from which it is distant at its nearest point not more than ten miles. It is separated from Siberia by the Gulf of Tartary, from the nearest part of Hokkaido by La Perouse Strait. The island is 600 miles long and about 105 miles across in its greatest width (south of latitude 50° north); area, about 25,000 square miles, of which about one-half belongs to Japan and the remainder to Russia; population of Japanese territory (1915), 57,200; of Russian portion, 34,000. At the close of the war between Russia and Japan, the southern half of the island, now called Karafuto, was ceded to Japan by Russia. Herring fisheries are the chief industry. Large portions could be agriculturally developed, and coniferous trees cover much of the land. Coal and alluvial gold are found. The Russian part of the isand is mainly a convict colony. No trade statistics.

Kwantung is a leased area in Manchuria, at the southern end of the Liaotung Peninsula. Latitude 39° 30′–39° north, longitude 121°–122° 30′ east; area, 538 square miles; population (1917), 855,100, chiefly Chinese. It contains the important cities of Dairen (formerly Dalny), the seat of administration, and Port Arthur. It came under Japanese control in 1904. The chief products are maize, millet, beans, buckwheat, wheat, rice, hemp, tobacco and vegetables. Salt is manufactured. The fishing industry is large. Port Arthur is the terminus of an important railway system, connecting at Mukden with several lines. Trade is mostly with Japan and China. Exports (1916), $80,329,170; imports, $38,259,700.

The Bonin and Sulphur Islands are two closely adjacent groups of 20 volcanic peaks. Latitude 27° north, longitude 142° east; area, 27 square miles; population, estimated, 4,500. For many years the islands were regarded as a British possession, but in 1861 Great Britain renounced her claims in favor of Japan. No commercial statistics.

The Kurile Islands are a chain of 31 volcanic islands extending northeasterly from Japan, to which nation they belong. Latitude 51°–44° 30′ north, longitude 136° 30′–156° 30′ east; area, 6,068 square miles; population, small. The islands are commercially unimportant.

The Liukiu Archipelago (also Loo Choo, Luchu, and Riukiu) is a long chain of 55 volcanic islands extending from Formosa to

Japan. Latitude 30°–24° north, longitude 123°–130° east; area, 941 square miles; population, estimated, 455,000. The islands, claimed for many years by Japan, became a possession of that nation at the close of the war with China in 1895. Sugar, lacquer, and pongee silk are the only important articles of commerce. No commercial statistics.

Japan, Mandatories of.—In general, the Peace Conference has made Japan the Mandatary for the ex-German colonies, leases and concessions on the Chinese mainland and the Pacific islands north of the equator.

Kiauchau is a district on the Shantung Peninsula. Latitude 36° north, longitude 120° east; area on land, 200 square miles; area of bay, 200 square miles; population, about 192,000. Surrounding the district is a neutral zone extending in a semi-circle around the bay for a distance of 30 miles from water, having an area of 2,500 square miles and a population of 1,200,000; virtually German. In 1897 Germany seized the territory, and exacted from China valuable mining and railroad concessions in the guise of a 99-year lease. The region is important as a port of entry for interior Chinese trade, and is active industrially. Fruits, beans, peanuts, and sweet potatoes are grown; silk culture, coal mining and briquetting, brewing and soap making are other industries. Imports are cotton and cotton goods and yarn, metals, paper, sugar and matches; exports, straw braid, silk, peanut and bean oil, and pongee silks. Exports (1916), $19,966,385; imports, $15,651,820.

In 1899 the Caroline, Palao (Palau or Pelew), and Mariana (Marianne or Ladrone) Islands were ceded by Spain to Germany; with the exception of Guam, the largest of the Marianas, which had passed to the United States in 1898.

The Caroline Islands are an archipelago of three groups of coral islands east of the Philippines, numbering about 500. Latitude 12°–3° 30′ north, longitude 138°–162° east; area, estimated, 380 square miles; population, estimated, 36,000, Malays and Chinese. Copra is the only export.

The Palao (Palau or Pelew) Islands are a group of about 26 islands west of the Carolines. Latitude 9°–3° north, longitude 131°–138° east; area, about 175 square miles; population, about 3,000. They were discovered in 1543. They were a Spanish pos-

session until 1899, at which time they were purchased by Germany. The islands are of strategic importance only.

The Mariana (Marienne or Ladrone) Islands form a group north of the Palaos. Latitude 21°–12° 30′ north, longitude 144°–146° east. They are inhabited mainly by Tagals descended from Filipinos. The largest, Guam belongs to the United States. Just after the Spanish-American War they were sold by Spain to Germany for about $4,200,000. Copra and mother-of-pearl are exported. No trade statistics.

The Marshall Islands consist of two chains of coral lagoon islands, called the Ratack (13 islands) and Ralick (11 islands) groups. Latitude 15°–4° 40′ north, longitude 162°–177° east; area, estimated, 160 square miles; population (1913), estimated, 15,179. Possession taken by the Germans in 1885. The natives are Malays; they are intelligent, and famous as sailors and boat-builders. Copra and tortoise shell, and mother-of-pearl shell are exported, and phosphates form the chief item.

Java:—see Dutch East Indies, p. 188.

Jarvis Island:—see British Possessions; Australasia, p. 169.

Jebel Shammar:—see Nejed, p. 239.

Juan Fernandez Islands:—see Chile, p. 179.

Jugo-Slavia (*Serb-Croat and Slovene State*).—A new state of southern Europe, uniting Serbia, Montenegro and the portions of Austria and Hungary inhabited mainly by Coats and Slavonians. Latitude 47° 40′–40° 50′ north, longitude 14° 30′–23° 10′ east. The boundaries will be based upon racial distribution rather than upon physical or past political factors. An important portion is the Dalmatian coast, which, from the head of Dalmatia to the northern boundary of Albania, furnishes the only sea-outlet for the Jugo-slavs. Much of the coast is valueless, in spite of good harbors, because of the inaccessibility of the hinterland. The vital necessity of such outlet accentuates the controversy with Italy over the possession of Fiume. The area and population are as difficult to determine as those of the other new countries; tentative estimates are 86,600 square miles and 14,000,000. Chief ports, Fiume, through which all the products of the northern sections must pass out, whoever may control the city; Ragusa, Cattaro; inland are Belgrade, the capital of old Serbia; Sarajevo and Nish, all important railway centers. The country has great extremes of topog-

raphy, climate and resources. The western section is wild, largely barren limestone, but containing some very fertile valleys as in Dalmatia. The northeast is in the great Hungarian plain region, and rich in agricultural opportunity. Serbia has some restricted areas of rich soil, but much lean country as well. On the whole, agriculture is backward. Cattle-raising is important in parts, and both could be developed much farther; manufacturing industries are few and primitive. Roads have been exceedingly poor, but a beginning has been made of improvement, through the construction of some modern military roads during the war. Railway communication is limited by topography, enhancing the commercial and strategic value of such roads as exist. The notorious "Berlin to Bagdad" railway required a line from Belgrade through Serbia toward Constantinople to make the plan feasible.

Kaiser Wilhelm's Land (German New Guinea):—see Australia, Mandatories of, p. 153.

Kamerun:—see Cameroons, The, p. 176.

Karikal:—see French India, p. 197.

Kashgaria:—see Sin-Kiang, p. 267.

Keeling Island:—see Cocos Islands, p. 183.

Kerguélen Island:—see French Possessions; Africa, p. 199.

Kermadec Islands:—see New Zealand, p. 244.

Khiva:—see Russian Possessions, p. 263.

Kiauchau (ex-German):—see Japan, Mandatories of, p. 229.

King's Islands:—see Kermadec Islands, p. 231.

Korea:—see Chosen, p. 182.

Koweit.—A small country of eastern Arabia, lying at the head of the Persian Gulf, between 29° 40′–29° north latitude; with Mesopotamia on the north and Hasa on the south. It is under British influence. Its chief importance comes from the port of Koweit, with a foreign commerce of $800,000 to $1,000,000 yearly. The imports are chiefly arms and ammunition, piece goods, coffee, sugar and rice; exports, horses, pearls, dates, wool. Its physical characters are like those of Oman and Hasa.

Kulja:—see Sin-Kiang, p. 267.

Kuria-Muria Islands:—see Aden, p. 143.

Kurile Islands:—see Japanese Possessions, p. 227.

Kwang-Chau-Wan:—see French Indo-China, p. 197.

Kwantung:—see Japanese Possessions, p. 227.

Labrador:—see Newfoundland, p. 243.

Labuan Island:—see Straits Settlements, p. 270.

Laccadive Islands:—see India, p. 219.

Ladrone Islands:—see Mariana Islands, p. 235.

Laos:—see French Indo-China, p. 197.

Latvia.—A state proposed in the Peace Conference to embrace the country occupied predominantly by the Letts, taken from the Riga region of western Russia. It consists of Courland, western Vitebsk and southern Livonia. Latitude 58°–55° 40′ north, longitude 21°–28° east; area, impossible to determine at this stage, possibly 25,000 square miles; population (1913), possibly 2,360,000. It contains the great ports of Riga, 569,000 (1913), and Libau, 91,000. The northern part is plateau-like, with poor soil and many glacial lakes, and largely forest-clad. Agriculture is advanced and scientific. Dairy farming and cattle-raising are important occupations. Through Riga are exported petroleum, wool, oil-cake, flax, linseed, timber and wood manufactures. Manufacturing is extensive. The Dvina River is an important highway. The Courland section is mainly low and flat, and often marshy. Cattle-raising, as well as agriculture, has reached a high state of success.

Leeward Islands:—see British West Indies, p. 174.

Leeward Islands:—see French Possessions; Australasia, p. 202.

Les Saintes Island:—see Guadeloupe, p. 213.

Liberia.—A Negro republic in West Africa. Latitude 8° 30′–4° 30′ north, longitude 11°–7° 30′ west; area, estimated, 40,000 square miles; population, including 12,000 Negroes from the United States (1915), estimated, 2,000,000; capital, Monrovia, estimated, 6,000. The state originated in the efforts to provide colonization of freed American slaves. First settlement at Monrovia 1822; the state was constituted in 1847. The boundaries were tentatively determined by an Anglo-Liberian agreement in 1885. The constitution is modeled after that of this country. With a coast line of 350 miles, Liberia is confined to the basins of the coast streams, none of which is important for navigation. The civilized population lives in towns along the coast and the farming districts near them, or penetrates a short distance up the streams. Behind the mangrove and pandanus swamps near the coast the country rises towards the interior, the successive steps of elevation being marked by rapids in the rivers. Most of the interior is

covered with dense forests, among which the native population chiefly lives in a state of barbarism. The country is cursed by malaria. Nearly all the colonists live by farming or the collection of palm oil and palm kernels. The chief exports are coffee of excellent quality, rubber, cocoa, ivory, ginger, and palm oil. Imports are rice, tobacco, gin, timber, galvanized iron, clothing, dried fish. Race, Negro; under the law no white man may become a citizen. The official language is English, and most of the civilized Negroes are Protestants. Exports (1913), $1,337,197; imports, $902,663.

Liechtenstein.—An independent principality between Austria and Switzerland, formerly part of the Rhine confederation, since the dissolution of which it has remained separate. Latitude 47° 15′–47° 05′, longitude 9° 25′–9° 35′ east; area, 65 square miles; population (1912), 10,716. Inhabitants chiefly German Catholics. Industry mainly agriculture, products being corn, wine, fruits, lumber. Cattle of fine quality are raised in the upland pastures. No trade statistics.

Lithuania.—A state proposed in the Peace Conference, to be taken from Russia, comprising the region predominantly occupied by people of that race. A recognition of the country was given by the Germans in the spring of 1918, covering a far greater territory than is likely to be accorded to it. In general, as now constituted, it occupies the government of Kovno, the northern part of Suwalki, and a small area in East Prussia north of the Memel River. Latitude 56° 30′–54° 40′ north, longitude 21°–27° 20′ east; area, approximately 17,000 square miles; population, possibly 2,100,000; chief city Kovno, 92,810 (1913). There is doubt regarding the southeastern boundary, where is a broad strip of debatable ground between Lithuania and Poland. The Lithuanians are allied to the Letts. The country is low and flat, with sandy soil and "black earth," many lakes and several navigable rivers, such as the Dvina, Nieman and Windau. Agriculture is the chief occupation, northern grains and vegetables being raised and exported. Cattle-breeding and dairying flourish. Manufacturing has considerable opportunity.

Little Elobey Island:—see Spanish Guinea, p. 269.

Liukiu (Riukiu) Archipelago:—see Japanese Possessions, p. 227.

Lombok:—see Dutch East Indies, p. 188.

Lord Howe Islands:—see British Solomon Islands, p. 173.

Louisiade Archipelago:—see Papua, p. 250.

Low Archipelago:—see Paumotu Archipelago, p. 251.

Loyalty Islands:—see New Caledonia, p. 243.

Luxemburg.—A grand duchy of Europe on the southeast slope of the Ardennes. Latitude 50° 10′–49° 25′ north, longitude 5° 44′–6° 31′ east; area, 998 square miles; population (1911), 259,891; administrative city, Luxemburg (1910), 20,848. From 1815 to 1866 a member of the Germanic confederation. It was declared a neutral territory and its integrity and independence guaranteed by a treaty of London, 1867. It was invaded by the Germans and occupied by them in the World War of 1914. The agricultural interests, including wine, mines, quarries and industrial establishments, are important. Nationalities, German and about 4,000 French-speaking persons. Religion, Catholic; language, a German patois with many French words; French is the commercial language. One of the iron fields in eastern France extends into it, and the production of iron ore in 1916 was 1,580,530 tons. No available trade statistics.

Macao:—see Portuguese Possessions, p. 258.

Macaulay Island:—see Kermadec Islands, p. 231.

Madagascar.—A colony of France and the fourth largest island in the world. Latitude 12°–25° south, longitude 43°–51° east; area, estimated, 228,000 square miles; population (1916), estimated, 3,512,695; capital, Antananarivo (1914), 63,115; chief ports, Tamatave, 8,647, and Majunga, 7,205. The people, consisting originally of small, independent tribes, were unified about the seventeenth century. Acquired by the French by conquest in 1885. The whole island was declared a French colony in 1896. Madagascar is 980 miles long; its broadest portion is 360 miles across. It has but few indentations except on the northwest coast, where the best harbors are situated. Since French occupancy the island has been considerably explored. The elevated interior is the most healthful region. Around it is a comparatively level country, extending to the sea, much of it heavily wooded, very fertile, but not healthful. The leading rivers flow to the west coast, and some of them are navigable by small vessels for 100 miles. The capital is in the elevated interior, where live the Hovas, the most advanced and intelligent of the native tribes. A railroad between Tamatave

and the capital is in operation. There are wagon roads from Antananarivo to both coasts. Cattle breeding and agriculture are improving under the French régime, and many schools and a number of hospitals have been established. The variety of agricultural products now grown is very large; the forests are rich in useful woods and gums; a considerable number of minerals are worked, and altogether the possibilities of the island are very great. The exports are caoutchouc, rubber, wax, hides, rice, gold and vanilla. Imports are cottons, clothing, beverages, metals. Races, Malagasy tribes, mainly Hovas, and Europeans. Religions, Protestant and Catholic. Exports (1916), $17,203,000; imports, $20,391,000.

Madeira Islands:—see Portugal, p. 256.

Madura:—see Dutch East Indies, p. 188.

Mahé:—see French India, p. 197.

Mahé Island:—see Seychelles Islands, p. 266.

Malacca:—see Straits Settlements, p. 270.

Malaysia:—see Australasia, p. 152.

Malay States, Federated:—see British Possessions; Asia, p. 165.

Malay States, Unfederated:—see British Possessions; Asia, p. 165.

Malden Island:—see British Possessions; Australasia, p. 169.

Maldive Islands:—see British Possessions; Asia, p. 165.

Malta:—see British Possessions; Europe, p. 172.

Manchuria:—see Chinese Possessions, p. 181.

Manono:—see German Samoa, p. 206.

Manus Island:—see Taui Island, p. 273.

Mariana Islands (German New Guinea):—see Japan, Mandatories of, p. 229.

Marie Galante Island:—see Guadeloupe, p. 213.

Marquesas Islands:—see French Possessions; Australasia, p. 202.

Marshall Islands (*German New Guinea*):—see Japan, Mandatories of, p. 229.

Martinique Island:—see French Possessions; America, p. 201.

Mauritania:—see French Possessions; Africa, p. 199.

Mauritius:—see British Possessions; Africa, p. 162.

Mayotte:—see Madagascar, p. 234.

Melanesia:—see Australasia, p. 152.

Mesopotamia.—In general, the watershed of the Tigris and Euphrates Rivers, lying between the mountains of western Persia on the east and the great Arabian and Syrian desert on the southwest except at the north, where it adjoins the mountain region of Kurdestan. On the south, where it is extremely narrow, it reaches the head of the Persian Gulf. The term is loosely used, and the confines of the region are impossible to define; but roughly it lies between 38°–30° north, and 38°–48° east. With a very ancient history, and under Turkish control since 1562, it is likely to be separated from Turkey and made a mandatory of one of the Allied and Associated Powers. Properly administered, it has in parts a great future as an agricultural country. The climate is varied, but harshly tropical over much of the region. Winter is the rainy season of growth, and by midsummer vegetation is parched. Sandstorms are widespread and frequent. In ancient times irrigation was practiced; and it is all the country requires today to make large areas extraordinarily productive. Modern irrigation works were projected on a large scale by the British, the first being opened for use in 1913; but only a small beginning has been made. Bagdad, 225,000, is the chief city; Mosul, 80,000, lies farther up the Tigris, and Basra, 80,000, at the head of navigation of the Shat-el-Arab, the master stream formed of the Tigris and Euphrates.

Mexico.—A republic of North America. Latitude 33° 30′–14° 30′ north, longitude 117°–86° 30′ west; area, 767,198 square miles; population (1912), estimated, 15,500,000; capital, City of Mexico (1910), 471,066; chief ports, Vera Cruz, 48,633; Tampico, Progreso, Port of Mexico, Salina Cruz, Acapulco, Mazatlan; other cities, Guadalajara, 119,468; Puebla, 96,121; Monterey, 73,528; San Luis Potosi, 68,022. Mexico was an Aztec kingdom, acquired by Spain through conquest in 1521. Spanish rule was ended by a revolution led by the patriot priest Hidalgo, 1810. Republic established, 1824. An overthrow of the republic was attempted by the leading powers about the time of the Civil War in the United States. War with the United States in 1846; a rebellion in 1913, since which the republic has been in an unsettled state. Mexico is a wide, high table-land between the Gulf of Mexico and the Pacific Ocean, with mountains rising above the plateau on the east and west. There are many volcanic peaks, a few of which are

active. The rivers are of little economic importance, the chief streams being the Rio Grande del Norte, forming the northeast boundary. On the low and marshy coasts a hot and unhealthful climate prevails. The coast lowlands are called *tierra calienta.* The *tierra templada* occupies the middle slopes of the coast mountains, and the lower parts of the plateau in the interior, where the climate is temperate and spring seems to be everlasting. The cold zone, *tierra fria,* is found on the more elevated table-lands; the loftier summits are crowned with snow. The rainy season lasts from May till October. The northern part of Mexico is an arid region, the industries of which are mining and grazing. The agricultural part is chiefly in the south.

With great variety of climate, Mexico has many agricultural products, but farming has not reached a high level, although rapid progress is now being made. About one-seventh of the surface has been cleared for tillage. The tropical lowlands produce vanilla, coffee, sugar-cane, cotton. In Yucatan the fiber commercially known as sisal hemp has become the largest agricultural export. Maize and beans are very large crops, and are the staple articles of diet. The favorite national drink, pulque, is prepared from the agave. Many tropical and other timbers are found in the forests. Most of the agricultural products are consumed at home, and Mexico's tropical fruits, tobacco and coffee have not yet entered largely into the world's trade. The breeding of domestic animals is growing in importance. Ranches are numerous in northern Mexico, many of the cattle being sent into the United States. The horses, mules, cattle, sheep and hogs are numbered by millions. But the chief source of wealth is the mineral products.

Mexico is the richest silver-producing country in the world, and also has large quantities of gold and other metals. The total production of gold and silver in the three centuries is about $4,000,000,000. Iron ore is abundant, and coal is found, but comparatively little is mined. The precious metals, chiefly silver, form the greater part of the exports. The oil fields in the vicinity of Tampico are among the most productive in the world, the output in 1918 being scores of millions of barrels. A large part of the product is used by the British navy; a considerable part is marketed in the United States. The exports of oil from Mexico in 1917–18 to the United States were 39,611,095 barrels; to other

countries, 14,281,276 barrels. The copper mines of Cananea, near the northern boundary, are among the most productive in North America.

The Gulf ports, Vera Cruz and Tampico, have been converted into safe and commodious harbors. Vera Cruz, for sisal hemp, is the chief port of the country. Progreso is the shipping port of Yucatan. The leading Pacific ports are Mazatlan, San Blas, Manzanillo and Acapulco, but they have little trade. Railroads reach all the most important commercial centers, and connect at Eagle Pass, El Paso and Laredo with the railroad systems of the United States. The ship railway across the isthmus of Tehuantepec is controlled by an English company. Races, Mexican, Spanish, and Indian. Religion, chiefly Roman Catholic. The exports are mainly silver, gold, copper, and sisal hemp. Textiles, hardware and machinery are leading imports, half of them coming from the United States and the remainder from Europe. Exports (1912-13), $150,202,800; imports, $97,886,000.

The Revilla Gigedo Islands are a group attached to the state of Colima, Mexico, situated about 420 miles west of Mexico. The islands are peopled by a few savages.

Micronesia:—see Australasia, p. 152.

Miquelon Island:—see French Possessions; America, p. 201.

Molucca Archipelago:—see Dutch East Indies, p. 188.

Monaco.—An independent principality, largely surrounded by French territory, in the extreme southeastern part, between Nice and Mentone. Latitude 43° 45′ north, longitude 6° 15′ east; area, 8 square miles; population (1912), 22,956; cities, La Condamine, 11,082; Monte Carlo, 9,627; Monaco, 2,247. Founded in the tenth century. In 1848 Mentone and Roccabruna seceded, leaving the present state wholly within France, except as fronting on the sea. A constitution was promulgated in 1911. The income of the state is derived chiefly from the tax imposed upon the famous gambling establishment maintained there. Olive oil, oranges, and citrons are exported. Perfumery is manufactured. Races, French and Italian. Trade is included in the statistics of France.

Mongolia:—see Chinese Possessions, p. 181.

Montenegro:—see Jugo-Slavia, p. 230.

Montserrat:—see British West Indies, p. 174.

Morant Cay:—see Jamaica, p. 225.

Morocco.—A sultanate and absolute despotism of northwest Africa. Latitude 36°–28° north, longitude 11°–1° west; area, about 231,500 square miles; population, estimated, 6,000,000; capital at the pleasure of the sultan; cities, Fez, 106,000; Marakesh (Morocco), 99,500; Casablanca, 82,500; Tangier, chief port, 46,000; Rabat, port, 37,500; Meknes, 36,700; all estimated, and about one-fifth of European descent. For the past half-century Morocco has been desired by each of several European powers, but political sentiment has prevented any material changes of government. Since 1912 the country has been a French protectorate, but with a Spanish influence recognized in the form of zones in certain cities. Tangier, an internationalized city, is the principal seaport and the seat of the foreign consuls.

Although mountainous in the north and south, Morocco on its central plateaus has rich opportunities for agriculture and stock-raising. Its undeveloped mineral wealth is very great, and in natural resources the state is regarded as richer than any other of the Mediterranean countries of Africa. It is, however, of little commercial importance, for the government is despotic, the taxes are onerous; life and property are not safeguarded; and the fanatical populace bitterly hate all peoples of non-Muhammadan faith. Under such conditions, extensive commercial development is impossible. Practically every change for the better has been thwarted by political intrigue. Races, Berber, Arab, Negro. Religion, Muhammadan. The imports are chiefly cottons, sugar, liquors, tea, flour, groceries and provisions, machinery and hardware, vegetables and fruit; exports, barley, wool, eggs, wheat, beans, maize, canary seed. Trade is mainly with France, Algeria and Great Britain. Total exports (1916), $18,925,000; imports, $65,200,000.

Mozambique:—see Portuguese Possessions, p. 258.

Nantucket Island:—see Baker Island, p. 154.

Natal:—see Union of South Africa, p. 275.

Nauru (Pleasant) Island (ex-German):—see Great Britain, Mandatories of, p. 210.

Nejed.—The great desert of central Arabia has been claimed by Turkey as the vilayet of Nejed, but its control over the nomadic tribesmen has been nominal at best. Now entirely separated from Turkey, it is unlikely, because of the natural inde-

pendence of its people and their fighting qualities, to join with Hejaz or any other state. The whole country is a high desert with scattered oases, inhabited by a very sparse population and incapable of maintaining more. The only means of subsistence must always be a small number of animals and the edible vegetation of the oases. While it may not become tributary to another state, it will remain one of the regions of the earth that are virtually irreclaimable, not contributing appreciably to the advancement of mankind.

Nejed is bounded on the north by Jebel Shammar, regarded by Turkey as an emirate. This region is but a continuation of the desert to the south, occupied by people wilder and more nomadic, and containing fewer and poorer oases. Whether this country, which has been virtually independent for seventy years, will return to the jurisdiction of Nejed is doubtful. In any event, it will contribute little to the economic well-being of this section of Asia.

To the south, occupying the coastal strip, lies the relatively fertile region of Hadramaut, extending from Yemen and Aden on the west to Oman on the east. The coastal plain has nowhere a breadth greater than ten miles, while to the north is the escarpment of the Arabian plateau. Despite these limitations and the small rainfall, the country supports a vigorous population and produces some little foreign commerce. Technically it has been a part of Nejed, but what attitude it will assume since freed from Turkish influence cannot be foretold.

El Hasa occupies the west coast of the Persian Gulf from Oman on the south to Koweit near the head of the gulf, or between latitude 29° 20′ and 25° 10′ north. It has been a dependency of Turkey, lately within the emirate of Nejed; but must be regarded as separate today from both. Its future is problematical. The British control of Mesopotamia, reaching southward through Koweit, may embrace it. The coast is low and unhealthful, even where fertile. The interior is part of the sterile Arabian plateau. Oases are not rare, however, and water is found, even outside them. The inhabitants are partly nomadic, partly sedentary, and there are several fixed towns as in Hadramaut. The region promises little, however, except as an outpost of some other country.

Nepal.—An independent kingdom in the Himalayas. Latitude 30° 17′–26° 25′ north, longitude 80° 6′–88° 14′ east; area, about

54,000 square miles; population, estimated, 5,000,000; capital, Katmandu (50,000). Inhabitants, chiefly Gurkhas. Religion, primitive Hinduism. Country under British influence. Chief imports, cattle, salt, spices, sugar, tobacco, drugs and dyes, petroleum, leather, brass, iron and copper utensils, cotton and silk, cotton and woolen cloth; exports, cattle, hides, drugs, gum and resin, jute, cereals, spices, tobacco, timber, saltpeter. Exports to British India (1916–17), $6,810,000; imports, $13,230,000.

Netherlands, The.—A limited monarchy of Europe. Latitude 53° 30′–51° 40′ north, longitude 3° 20′–7° 15′ east; area, exclusive of water, 12,582 square miles; population (1917), 6,583,227; capital, Amsterdam (1917), constitutional, 628,404; Hague, the seat of government, 334,081; other cities—Rotterdam, 487,077; Utrecht, 133,344; Groningen, 86,287; Haarlem, 73,307. The United Provinces of The Netherlands was made a state in 1795, and a kingdom in 1815. A flat country with monotonous plains, interrupted only by dunes and a few higher undulations in the east and south. The dunes, stretching along the coast, owe their existence to the winds and waves, which heap the sand into rows of hills. One-fourth of the country lies below sea-level, some districts being from 12 to 20 feet below. Engineering plans now under advisement are reclaiming an area from the Zuider Zee aggregating 523,000 acres. Most of the country would be permanently under water, were it not protected from the sea by the dunes and gigantic embankments of earth faced with stone or protected by stakes. These works are called dikes, and they protect the coast from the sea at the points where there are no dunes. The climate is oceanic and moist. The summers are not very warm and the winters are not often very cold. The North Sea washes the whole coast line, which is difficult of access on account of the dunes. The chief rivers are the Rhine, the Meuse, or Maas, and the Scheldt. The river mouths, with their ebb and flow, and a number of bays, chiefly in the Zuider Zee, form the few harbors, of which Rotterdam and Amsterdam command nearly all the sea trade.

The country is a land of canals, all the towns and villages being connected by them. These furnish about 2,000 miles of inland navigation. The railways total about 3,000 miles. The most important waterways are the North Holland Canal, from Amsterdam to Helder, which, however, is not wide enough for modern large ships

to enter; the North Sea Canal, 16 miles long, utilized by large steamships between Amsterdam and the North Sea; and the Rhine Mouth Canal, which gives Rotterdam a deep channel to the sea. The most fertile provinces are in the north and west, and in a part of Limburg, where agriculture has reached a very high stage. Grain, potatoes and vegetables are the chief crops. The Dutch excel in the cultivation of flowers, vegetables and fruit, which are important exports to neighboring countries, chiefly England. The country imports its timber, because it is almost destitute of forests. One of the greatest national resources is cattle rearing, which has attained a development equaled in few other countries. Live cattle are exported, and enormous quantities of cheese and butter are sent abroad, mainly to London. The superior horses bring large prices. Sheep are bred mainly for mutton, great quantities of eggs are sent to England, and fishing is a large source of wealth.

The supply of minerals is scanty, but some coal is mined in the southeast. A considerable part hitherto has been obtained from Germany. Peat is the chief fuel, and is cut in large quantities. The Netherlands is not an industrial state, its manufactures hardly meeting its own demand. Calicoes are made in great quantities for the colonial trade. Earthenware of all kinds is produced, there being no building stone, and billions of brick are required for building operations. Tobacco manufactures and sugar-refining are among the other leading industries. Diamond cutting has decreased, as the industry has to a large extent been transferred to Paris and London. Railroads are used chiefly for passenger traffic and the international freight trade, the canals being the main reliance for domestic transportation. A very large part of the exports and imports consist of "transit trade"—that is, the goods originating in Germany which cross The Netherlands to be shipped from Amsterdam or from Rotterdam. The Dutch have one of the largest colonial empires, and exploit their colonies strictly for their own benefit; and these possessions are a great source of wealth, giving The Netherlands much of its importance as a commercial nation. Races, Dutch and other Europeans. Religions, Protestant, Roman Catholic, and Hebrew. The chief trade is in colonial products, but the larger part of the exports of home products goes to neighboring countries. The larger part of the imports are from Prussia, Dutch East Indies, Great Britain, and United States; the

exports go to the same countries. Exports (1913, the highest year), $1,285,000,000; imports, $1,632,500,000.

Neu Hannover Island:—see Bismarck Archipelago, p. 158.

Neu Lauenburg Islands:—see Duke of York Islands, p. 188.

Neu Mecklenburg Island:—see New Ireland Island, p. 244.

Neu Pommern Island:—see New Britain Island, p. 243.

New Britain Island:—see Bismarck Archipelago, p. 158.

New Caledonia:—see French Possessions; Australasia, p. 202.

Newfoundland and Labrador.—An insular crown colony of Great Britain. Latitude of the island, 51° 40′–46° 40′ north, longitude 59° 20′–52° 40′ west; area, 42,734 square miles; population (1917), 252,836; capital, St. John's (1911), 32,292; other cities—Harbour Grace, 4,279; Carbonear, 3,540; Bonavista, 3,900. Dependent upon Newfoundland is Labrador, a narrow strip on the mainland coast of the Labrador Peninsula. Latitude 65°–56° west, longitude 61°–52° north; area, 120,000 square miles; population (1916), 4,073; a bleak and storm-swept country, in which fishing is the chief occupation. Newfoundland was acquired by Great Britain in 1583. At the close of the French and Indian wars it was ceded to Great Britain in 1763 by the treaty of Utrecht. It is not a province of the Dominion of Canada. The fisheries of Labrador being practically monopolized by Newfoundland fishermen, the Labrador coast is united with Newfoundland for administrative purposes. St. John's is nearer to Europe than any other port of America, being only 1,675 miles from Cape Clear, on the west coast of Ireland. The east coast of Newfoundland is therefore an important locality for the Anglo-American ocean cables and for radio-telegraphy, and has recently been used as a point of departure for trans-Atlantic flight. Although good farming land is plentiful in the west and in some of the valleys, the fishing industry dominates everything and agriculture is neglected. Nearly the whole population is devoted to the fishing trade during some part of the year. The hair seal is hunted by many vessels for its oil and skin; and the cod, herring and lobster fisheries give employment to many. Fish are cured in great quantities. Dried codfish form about half the exports; fish offal is exported for fertilizer. Cod liver oil is used in nearly every part of the world. Seal skins are also exported. Wood pulp for the manufacture of paper, next to codfish, is the most important product. Mineral

resources are important, the bedded iron ores of Bell Island, especially, furnishing Canada with much of its iron. The chief imports are flour, textiles, hardware; exports are dried cod, pulp and paper, herring, iron ore. Race, chiefly British. Religion, Protestant. Exports (1915-16), $19,500,000; imports, $16,883,600.

New Guinea:—see Papua, p. 250.

New Hebrides Islands:—see British Possessions, and French Possessions; Australasia, pp. 169 and 202.

New Ireland Island:—see Bismarck Archipelago, p. 158.

New Territories:—see Hong Kong, p. 218.

New Zealand.—A British Dominion, consisting of North Island, South Island, Stewart Island, and the Cook, Chatham, Auckland, and Kermadec groups. Latitude 34° 30′–47° 30′ south, longitude 166° 30′–178° 30′ east; area, North Island, 44,130 square miles; South Island, 58,120 square miles; Stewart Island, 622 square miles; total with nearby islands, 103,581 square miles; population (1916), North Island, 651,072; South Island (including Stewart and Chatham Islands), 448,933; total, exclusive of Maoris and Cook Islanders (62,513 in 1916), 1,099,499; seat of government, Wellington (1916), 95,235; other cities—Auckland, 133,712; Christchurch, 92,733; Dunedin, 68,716. Probably settled by Polynesians in the fourteenth century. English missionaries and various traders settled in the islands early in the nineteenth century; in 1852 the colony became self-governing; in 1907 the Dominion was formed. The islands are mountainous, the loftiest peak being Mount Cook, in South Island (12,349 feet). The climate is oceanic, but the loftier mountains are snowclad, affording a rich supply of water to the broad valleys and the plains bordering the sea. The mean temperature of Auckland is 68° F. in January and 50° F. in July. All the climatic conditions make New Zealand a delightful place of residence. Two-thirds of the country is suitable for agriculture and grazing. The leading branch of farming is cattle and sheep raising, the industry being stimulated by the luxuriant meadows and prairies. This fine natural condition for the animal industry is enhanced by the cultivation of fodder root crops. Sheep are most numerous in the southern part of North Island and the eastern part of South Island. Wool is the most important export crop. Cattle are extensively raised and the exports of butter, cheese and refrigerated meats to Europe are very great.

The common farm crops of the temperate zone are rapidly developing and the farm lands aggregate about 16,800,000 acres. The damp, steep western slope has little agriculture, but the warm, dry plains of the east of South Island especially make ideal farming lands. A great amount of wheat, linseed and oats is raised. Phormium, or New Zealand flax, grows wild, and is used for making paper, cordage and some fabrics. Gold, silver, coal and petroleum are also large resources. The chief manufactures deal with the working up of animal products. Most of the foreign trade is with Great Britain; wool, meats, gold, grain and Kauri gum are exported. Australia comes second, and United States third. Races, chiefly British and Maori. Religion, Protestant. Exports (1916), $166,435,000; imports, $131,696,500.

Attached to New Zealand are several groups of islands. The Auckland Islands are 200 miles south of Stewart Island. Latitude 50° south, longitude 166° 20′ east; area of the largest island, 330 square miles; uninhabited; used only as a refuge for shipwrecked mariners, a station being maintained on the largest island.

The Chatham Islands. Latitude 43° 50′ south, longitude 177° west; 536 miles east of New Zealand; area, 375 square miles; population (1916), 477.

The Cook Islands are an archipelago, containing several smaller groups. Latitude 8°–23° south, longitude 157°–170° west; area, about 280 square miles; population (1916), about 13,000. Legends of the native peoples, practically all Polynesians, point to the belief that the islands were peopled by Samoans. The islands have been under the administration of New Zealand since 1901. Copra, coffee, pearlshell, fruits, hats and caps, and lime juice are the export products. Fourteen islands or groups constitute the archipelago. Of the latter are the Parry, Hervey, and Savage Islands.

The Kermadec Islands are a group in latitude 36° south, longitude 178° 30′ west. They are of strategic value only, being uninhabited at present. Total area, 15 square miles. The chief islands are Raoul or Sunday, and Macauley; smaller ones are the Campbell, King's, Antipodes, and Bounty Islands.

New Zealand, Mandatory of.—One ex-German colony has been granted to New Zealand as mandatory by the Peace Conference.

German Samoa. Latitude 14° south, longitude 172° west. Of

the Samoan group, the islands of Savaii and Upolu were given by Great Britain to Germany in 1899. Area, Savaii, 660 square miles; Upolu, 340 square miles; population (1912), 35,000; chief port, Apia on Upolu. Two other small islands, Manono and Apolima, also belonged to Germany. Inhabitants, Polynesian, nominally Christians. The country is extremely fertile. Exports (1915), $1,311,950; imports, $118,550.

Nicaragua.—A republic of Central America. Latitude 15°–10° 45′ north, longitude 87° 30′–83° 15′ west; area, estimated, 49,200 square miles; population (1914), estimated, 703,600; capital, Managua, 34,872; other cities—Leon, 62,569; Granada, 17,092; Matagalpa, 15,749. A part of the Spanish possessions, declared independent of Spain in 1821. The Mosquito coast, now Bluefields, under British protection for many years, was turned over to Nicaragua in 1906. By a treaty in 1916, the United States acquires the right to construct an interoceanic canal across Nicaragua, together with the occupation of Fonseca Bay as a naval base. Nicaragua is the largest state of Central America, with extensive seaboard on both the Pacific Ocean and the Caribbean Sea. The population is largest on the Pacific slope of the state (over 75 per cent.).

The eastern part is covered with tropical forests containing "Honduras mahogany," other cabinet woods, and dyewoods. Bananas are extensively grown in the valley of Bluefields River and its estuary. They are the chief export of the eastern part, being shipped from Bluefields, the chief Atlantic port. The commerce of the fruit-growing industry is controlled practically by the United Fruit Company. The principal export product of the western country, coffee, is chiefly grown around Leon. The mines yield gold, silver, and copper. They are operated mainly by American and British companies. Many of the coffee plantations are owned by Americans. Cattle in the northwest supply many hides for export. Corinto, most important for commerce, and San Juan del Sur are the Pacific ports. A railway connects Corinto with the large interior towns. Races, Spanish-American and Indian. Religion, chiefly Roman Catholic. Exports (1916), $5,285,000; imports, $4,777,600.

Nicobar Islands:—see India, p. 219.

Nigeria and Protectorate:—see British West Africa, p. 173.

Ninigo Group:—see Bismarck Archipelago, p. 158.

Nissan Islands:—see Bismarck Archipelago, p. 158.

North America.—Latitude approximately 83°–7° north, longitude 170° east to 50° west; area, about 8,000,000 square miles (16 per cent. of all the lands); here interpreted to include all land south to the limit of Panama. Its great range of latitude results in most varied climate; but a relatively small portion is dry desert, and no very large percentage is cold desert. The northern portion was completely covered by ice during the Ice Age recently past, and its soils show marked effects of the mixing action so characteristic of glaciated areas. To this may be attributed the fertility of some and the endurance of other parts. The land contains some of the largest areas of fertile soil in the world; its manufactures lead the industrial world, and its commerce, chiefly from United States, today commands the world's trade. Its outlook on two oceans aids greatly in its commercial relations. It is unlike other continents in having a small number of countries instead of being dissected into many small nations like Europe, or possessing numerous tributary states like Asia or Africa.

Northern Territories:—see British West Africa, p. 173.

North Island:—see New Zealand, p. 244.

Norway.—A kingdom and constitutional monarchy occupying the western and northern part of the Scandinavian peninsula. Latitude 71° 30′–58° north, longitude 5°–36° east; area, 124,643 square miles; population (1910), 2,391,782; capital, Kristiania (1910), 241,834; other towns—Bergen, 76,867; Trondhjem, 45,335; Stavanger, 37,261; Dramen, 24,895. The chronicles of Norse vikings date back several thousand years. The period of written history begins in 1204. In 1814 Norway was made an independent kingdom in union with Sweden. In 1905 the union was dissolved and Haakon VII became king. Norway is a mountainous coast country on the north Atlantic; the entire shore line including fiords and large islands, being about 12,000 miles long. The prevailing westerly winds, warmed by their passage over the Atlantic, keep the fifty ports among the fiords open the year around, for the drift of warm ocean water keeps the harbors free from ice. The same influence makes oats a flourishing crop at 64°, and barley even at 70°. The country is so rugged that not much of the land produces food staples, and over 75 per cent. of the surface is unproductive. The grain and potato crops satisfy

only one-half of the domestic consumption. The most important vegetable resource is the forests, which cover one-fourth of the area; the timber is close grained and tough, and Norway is one of the leading lumber-producing countries. Sufficient cattle and sheep are reared to meet the home requirements, but only a small quantity of wool is exported. The most valuable animal product is derived from the sea, the cod and herring fisheries yielding millions of dollars every year, and providing a large part of the food of the inhabitants. The principal cod fisheries are off the Lofoten Islands; the less valuable herring fishery is pursued all along the coast. The mining interests are important. Iron ore for smelting, and iron pyrites, used in the manufacture of sulphuric acid, are the chief mineral products. Copper and nickel are also mined. The abundance of water power not only stimulates lumber manufacture, but as hydroelectric power carries the manufacturing industries to the various centers of population. Kristiania, Bergen and Trondhjem are the leading ports. Races, Norwegians, Finnish and Lapp. Religion, chiefly Lutheran, the state church. Exports are mainly to United States, Great Britain, Germany and Sweden; imports from Germany, Great Britain, Sweden and United States. Exports (1915), $186,944,800; imports, $241,102,000.

Nyassaland Protectorate:—see British Possessions; Africa, p. 162.

Oceania (*Oceanica*):—see Australasia, p. 152.

Ocean Island:—see Gilbert and Ellice Islands, p. 208.

Old Kowloon:—see Hong Kong, p. 218.

Oman.—An independent state in the southeastern part of the Arabian peninsula. Latitude 26° 30′–17° north, longitude 50° 30′–60° east; area, 2,000 square miles; population, estimated, 500,000; capital, Muskat (24,000). Occupied by the Portuguese until the middle of the seventeenth century, later becoming an independent sultanate. Has gradually lost much of its territory. The Arab population is unstable, and the little land possible for agriculture is but slightly tilled. Camels in large numbers are bred on the inland desert. Commerce, chiefly by caravans and sea routes, is with United Kingdom, India, Persia, and France. Exports, chiefly dates, limes, fish, cotton goods; imports, rice, coffee, cloth, cereals. Trade figures incomplete.

Orange Free State:—see Union of South Africa, p. 275.

Palao Islands (German New Guinea):—see Japan, Mandatories of, p. 229.

Palestine.—The Holy Land occupies southern Syria, and by the Syrians is not regarded as a separate unit. It begins at the north at the latitude of Beirut, 34° north, and extends to the boundary of Hedjaz on the south, about 30° north. To the west lies the Levantine Gulf, to the east the Arabian desert at the south, and part of Syria proper farther north. Jerusalem, 85,000, is the largest town; others are Jaffa, 45,000, and Gaza, 40,000. There are no good ports. The topography is varied, part of it being rugged, with bare rock surfaces or thin soil. The valley of the Jordan and the Dead Sea is a remarkable down-fallen block of the earth's crust, called a "rift" valley, and its surface is below sea-level at the Dead Sea. In the larger valleys the soil and water afford good vegetation, and agriculture flourishes; but as a whole the country cannot be made to feed a large population. Sub-tropical fruits and grains are the produce. Area, about 13,970 square miles; population, 1,074,100.

An extensive movement has been launched to make of Palestine an independent Jewish state, possibly as a mandatory under one of the Allied and Associated Powers.

Palmyra Island:—see British Possessions; Australasia, p. 169.

Panama.—A republic of North America. Latitude 9° 30′–7° 15′ north, longitude 83° 30′–77° 15′ west; area, 32,380 square miles; population (1916), exclusive of canal zone, 450,000; capital and Pacific port, Panama (1915), 60,028; Atlantic port, Colon, estimated, 26,000. Formerly a state of Colombia. On the refusal of Colombia to ratify a treaty with the United States respecting the Panama Canal, the state of Panama seceded in 1903 and declared itself an independent republic. The state and the isthmus are practically one, extending from Colombia to Costa Rica. The ranges of mountains that border the Pacific coast of the continent give shape to the isthmus. About 150 short rivers flow to the sea from the northern side, and more than twice that number drain the Pacific slope. The largest river, Tuira, is navigable for river schooners as far as Santa Maria del Real. The Bayamo, discharging into the Gulf of Panama, is said to be navigable for small craft for 120 miles. Panama has many bays and ports on both

oceans, but most of them are unavailable for commerce. There is no hinterland which offers an easy field for development. Dense forests cover three-fourths of the state, and the greater part consists of unoccupied land. The climate and the products are tropical. The Canal Zone, the cities of Panama and Colon excepted, is under the control of the United States; the two cities are under the jurisdiction of the state. The production of the state consists mainly of bananas, coffee, and caoutchouc and these are the chief exports. Cattle raising is successful, and hides are exported. Panama and Colon are the only important ports. The people represent an admixture of Spanish, Negro and Indian blood. The great traffic crossing the isthmus is almost wholly transit trade. Imports are chiefly from United States. Exports (1916), $5, 709,225; imports, $9,397,365.

Panama Canal Zone:—see United States, Outlying Territories, p. 285.

Pangkor (Dindings):—see Straits Settlements, p. 270.

Papua:—see British Possessions; Australasia, p. 169.

Paraguay.—A republic of South America. Latitude 21°–27° 30′ south, longitude 61° 30′–54° 30′ west; area, estimated, 65,000 square miles, exclusive of the Chaco claimed also by Bolivia (about 100,000 square miles), population (1917), estimated, 1,000,000; capital, Asuncion, estimated, 120,000; other cities—Villa-rica, 26,000; Concepcion, 15,000; Carapegua Luque, 15,000, all estimated. Paraguay gained independence of Spanish rule in 1811. The history from that time was turbulent and revolutionary. Peace came with a new constitution in 1870. One of the smallest states of South America; it does not touch the sea, but the Parana and Paraguay rivers, accessible to large steamers, give it an outlet to the Atlantic. It is mountainous in the east, has a sub-tropical climate, agreeable and healthful, and receives abundant rainfall. Most of the country is well adapted for foreign colonization. The western part, bordered by the Pilcomayo River, is a low, warm plain, interspersed with forests and especially adapted for cattle raising. The eastern and more populous region is mainly covered with dense forests with great but undeveloped wealth in timber, interspersed with plains, especially towards the south, which are splendidly adapted for cattle and farming. The vast resources of all kinds are still

little developed. Rice, sugar-cane, maize and the potato are the chief farm crops, but the great product is maté, or "Paraguay tea," which is both cultivated and gathered wild. It is exported to the amount of about 15,000,000 pounds a year and is sold chiefly to people in several South American states. It is regarded as an excellent substitute for tea and coffee. Tobacco is also grown for export. Domestic animals are confined chiefly to cattle which are raised mostly for local consumption. Iron, kaolin and salt are abundant but little developed. A few home industries supply most of the demand except for textiles and hardware. Railways connect Asuncion with the Uruguay railway lines and also with Buenos Aires. Races, Spanish-American and Indian. Religion, Roman Catholic. Exports (1913, the highest year), $5,631,000; imports, $8,120,000.

Parry Islands:—see Cook Islands, p. 184.

Paumotu (Low) Archipegalo:—see French Possessions; Australasia, p. 202.

Pedro Cay:—see Jamaica, p. 225.

Pelew Islands:—see Palao Islands, p. 249.

Pemba Island:—see British East Africa, p. 160.

Penang:—see Straits Settlements, p. 270.

Perak (Dindings):—see Straits Settlements, p. 270.

Perim Island:—see Aden, p. 143.

Persia.—A despotic monarchy of southwest Asia. Latitude 39° 45′–25° north, longitude 44°–62° 20′ east; area, estimated, 628,000 square miles; population, estimated, 9,500,000; capital, Teheran, estimated, 280,000; other cities—Tabriz, 200,000; Ispahan, 80,000; Meshed and Kirman, 60,000 each. The ancient history of Persia extends several thousand years back of the Christian era. In the early period of written history it was occupied by Aryan people. The name "Iran" commonly used as a name of Persia means "Aryan." Cyrus, Xerxes, and Darius, kings of Persia, were sovereigns whose fame extends throughout the world. The last-named is a factor in Masonic history. Alexander the Great overcame the kingdom about 331 B.C. At the beginning of the World War, Great Britain and Russia commanded spheres of influence that covered most of the kingdom. At that time German aggression was already in evidence. Persia is a high table-land, more than a third of it is a sandy desert and salt plain,

mountainous in the west and north. Cultivation is confined mainly to the irrigated valleys of the western part. The rainfall is largely deficient; the climate healthful, but very warm. The Persian monarch assumes the title of Shah-in-shah, or King of Kings, and his government is an Oriental despotism. The administration is corrupt, but the adoption of European innovations in the army has given to Persia an appearance of progress. During the World War a part of the country was a battleground between the Germans and the Allies. The real wealth is in arbori-culture, particularly fruits. Cotton raising has made great progress. All kinds of minerals are found, but they will not be available until the methods of transportation are improved and mining regions are opened to foreigners. Most turquoises, however, come from Persia. House industries supply most of the local demand, and the Persians are famous for the carpets and rugs of Tabriz, Kermanshah, and Hamadan. These form the export that brings Persia in touch with most of the world. Silk and opium production are large and increasing. Race, Persian. Religions, chiefly Muhammadan, Christian, and Jewish. Imports are in excess of exports; textiles, glass, sugar, kerosene and tea and coffee being large purchases. Cotton, fruits, wool, silk, carpets, pearls, and turquoises are the chief exports. Exports (1913–14, the highest year), $41,440,000; imports, $58,833,000.

Peru.—A South American republic. Latitude 3° 30′–18° south, longitude 81° 30′–71° west. The western extremity of Peru and of South America is in practically the longitude of Cleveland, Ohio. Area, 722,462 square miles; population, estimated, 4,500,000 (no official statistics); capital, Lima (1913), 143,500; chief port, Callao, 34,346 (1905); other cities—Arequipa, 35,000; Ayachuco, 14,346; Iquitos, 12,000; Cuzco, 12,000. Like other one-time Spanish possessions, Peru declared itself independent in 1821. The present constitution went into effect in 1860. Peru has a long littoral on the Pacific, and a part of its territory extends to the east of the Andes, giving access to the Atlantic by the Amazon River. Ocean steamships ascend to Iquitos, the collecting market for the eastern forest products. The plain between the Andes ranges and the Pacific is a desert, with ribbons of verdure along the streams, bordered by irrigated plantations where sugar-cane, cotton and tobacco are raised. The mountain ranges are eco-

nomically important for their vast stores of minerals and the rivers that their melting snows send to the sea. The forests east of the mountains are rich in rubber and cinchona, from which quinine is prepared, and have splendid prospects for tropical agriculture, as yet little developed. The climate is tropical in the lowlands. Agriculture is limited to the production of food consumed at home. The plantations supply some export cotton, rice and coca, from which cocaine is derived. Sugar-cane is grown for home refineries. Cattle are numerous among the foothills of the Andes. The alpaca supplies much wool, and the llama is used chiefly for mountain transportation. Sugar, cotton, copper, and petroleum are the chief exports; imports are cloth, wheat, lumber, coal. Mining is restricted by the lack of transportation. Of the 1,700 miles of railway only a few lines reach the mineral districts. Short extensions will connect the Peruvian centers with lines converging at Buenos Aires. Manufactures are confined to sugar refineries, tanneries, coca laboratories, breweries and a few cotton mills. The largest imports are textiles, iron and steel goods, machinery and groceries. Race, Spanish-American and Indian. Religion, Roman Catholic. Exports (1916), $82,705,300; imports, $43,415,750.

Pescadores Islands:—see Japanese Possessions, p. 227.

Philippine Islands.—A group of the Malay archipelago consisting of 3,141 islands, of which about 2,750 are very small islets. The largest, Luzon, Mindanao, Mindoro, Palowan, Panay, Samar, Negros, and Leyte comprise the important members of the group. Latitude 21° 30′–4° 30′ north, longitude 117°–126° 41′ east; area of Luzon, 40,814 square miles; Mindanao, 36,906 square miles; total estimated area, 120,000 square miles; population, estimated, 9,000,000; capital, Manila, 266,943; other cities, Iloilo, on Panay, estimated, 60,000; Cebu, on Cebu, estimated, 60,000. The islands were discovered by Magellan in 1521. By the Bull of Pope Alexander VI they were a possession of Spain. They were acquired by the United States at the close of the Spanish-American War in 1898. Mountains are the chief topographic feature. The larger islands, especially Luzon and Mindanao, have broad, well-watered plains that are tillable, but not over a third of the area is adapted for cultivation. The climate is tropical, the night breezes from the sea affording some relief, but as a whole the islands are

not healthful for the white race. The population is densest in Luzon and the Visayas, or central islands. Rice is the chief production, but in poor years much is imported from Cochin-China, as this grain is the chief food. Manila hemp, a strong, coarse fiber derived from a species of the banana, is the best material for cordage and sailcloth and is a large export, the Philippines being as yet the chief source of supply. Copra and sugar comprise about one-third of the value of the exports. Tobacco is also an important crop, the best growing in northern Luzon, whence it is sent to other parts of Asia. Manila cigars have a large sale also in the United States. The mineral wealth is large but undeveloped. The United States has established local self-government wherever practicable, is efficiently protecting life and property, and is developing the islands by establishing agricultural experiment stations and schools. The government has surveyed the coasts in the interests of fishing, and in many other ways is doing much to facilitate progress. The Tagals of Luzon and the Visayas are more advanced in civilization than the other natives, who include the dwarf Negritos and the Muhammadan Moros. Races, Malayan, Negroid, Chinese and whites. Over 3,000,000 profess Christianity (Roman Catholic). Imports are chiefly cotton goods, hardware and machinery, and rice, exports, hemp, sugar, copra, tobacco products. Exports (1917), $17,715,375; imports, $51,983,273.

Phœnix Islands:—see British Possessions; Australasia, p. 169.

Pitcairn Island:—see British Possessions; Australasia, p. 169.

Pleasant Island (*ex-German*):—see Nauru Island, p. 239.

Poland.—Perhaps the most important, as it is the most interesting, of the new states created or recognized by the Allied and Associated Powers. In general, it is to comprise the region occupied chiefly by Poles. A definite portion of German territory was ceded to it from Germany by the Treaty of Versailles (1919), amounting to 20,780 square miles, and a smaller area, 5,723 square miles, is to decide by vote whether to join it or to remain in East Prussia. The 729 square miles embraced within the Free City of Danzig will be dominantly under Polish influence. The main body of the country is the Russian province of Poland, with a small area of Suwalki lost to Lithuania at the north. In addition, a large region adjacent on the east is included, comprising sev-

eral Russian governments, and inhabited by White Russians and Ukranians, as well as Poles. Galicia, taken from Austria, seems likely to be included, as also a considerable section of northeastern Hungary. As thus constituted, Poland stretches from 56°–54° 40′ north, and 16°–28° 30′ east. The area is impossible to estimate accurately; but may be stated tentatively at 165,000 square miles. The population is not known, but is probably in excess of 35,000,000. Drained by the Vistula, the state would yet be too centrally located for effective growth, were it not for the "corridor" accorded to it by the Treaty of Versailles, running down the river and separating Prussia from East Prussia. Danzig, at the mouth, has been internationalized, giving to Poland good, if somewhat inadequate, coastal outlet.

Poland has great age as a nation; but has not persisted, in part because of a lack of natural boundaries to reinforce the racial ones. Now, however, with the League of Nations to aid it in resisting aggression, it should not only maintain its integrity, but become one of the great countries of Europe. Its topography and climate are alike varied; and its industries are as a result numerous. The area includes some of the best agricultural land in eastern Europe, and contains vast stores of mineral wealth, coal, iron, oil and lesser varieties. Forests are extensive. Manufacturing is on a large scale, and can be vastly increased. Altogether, Poland, if properly governed, can become one of the most productive countries of Europe. Important cities are Warsaw, 910,000 (1913); Lodz, 416,000; Vilna, 204,000; Lemberg, 212,000 (1914); Krakau, 171,000 (1914); Danzig, 170,000 (1910) will be virtually Polish commercially.

Polynesia:—see Australasia, p. 152.

Pondichery:—see French India, p. 197.

Porto Rico (Puerto Rico).—An outlying territory of the United States in the West Indies. Latitude 18° 30′–17° 50′ north, longitude 17° 15′–65° 15′ west; area, 3,606 square miles; population (1914), estimated, 1,184,500, a density of about 325 per square mile; capital, San Juan (1910), 48,716; other cities—Ponce, 63,444; Mayaguez, 42,429. Porto Rico was discovered by Columbus on his second voyage, in 1493. It remained a Spanish possession until 1898 when, at the close of the Spanish-American War, it was ceded to the United States. Although Porto Rico is

not yet a Territory by enactment, it has a territorial organization. The island is 95 miles long and 35 broad. The central range of mountains extends nearly the entire length of the island, condensing the moist trade winds; so that the northern half of the island has abundant rainfall, while the fields of the southern half often require irrigation. For this reason the streams of the northern slope contain more water than the southern rivers, and many small boats carry farm produce to the north coast towns. Alluvial plains skirt the coast, but most of the island is broken. The tropical climate is tempered by the trade winds. In the late summer and autumn the island is visited at times by severe hurricanes. Most of the farms are small, and four-fifths of the population are engaged in agriculture. The staple products are coffee, sugar and tobacco. The coffee shrubs, grown in the shade of banana and guava trees, do best on the foothills. The quality of the bean is excellent, and the product meets with ready sale. Sugar-cane is planted chiefly on the alluvial coastal plains, and sugar is about one-half the total value of exports. Bananas, pineapples and grape fruit are important export products. The finest tobacco districts are in the inland mountain regions. The mineral resources are not large, but the evaporation of brine supplies the island with about 10,000,000 pounds of salt a year. Iron ore, gold and copper ore occur. Gypsum, useful in making stucco, is plentiful, and there is an abundance of building stone. The United States has connected the important towns with good roads, and these have an aggregate length of more than 1,000 miles. Railways practically encircle the island. San Juan and Ponce are connected by an excellent macadam road, and sections of a coast railroad that is to extend around the island are in operation. Steamers ply around the island as well as to the United States, Europe and neighboring islands. Races, whites, Negroes and mixed breeds. Religion, chiefly Roman Catholic. Nearly all the trade is with the United States. Exports (1917), to United States, $73,115,224, to foreign countries, $7,855,693; imports from United States, $49,539,249, from foreign countries, $4,005,975.

Portugal.—A republic at the western extremity of the Iberian Peninsula. Latitude 42°–37° north, longitude 9° 30′–6° 15′ west; area, excluding Azores and Madeira, 34,254 square miles; population (1911), 5,545,595; capital, Lisbon (1911), 435,359; other

cities—Oporto, 194,000; Setubal, 30,346; Braga, 24,647; Coimbra, 20,581. An independent monarchy, founded in the twelfth century. Portugal became a republic in 1910. Most of the country is mountainous. The plains, very fertile, are almost wholly confined to the west coast and along the rivers. The climate is oceanic, and high degrees of temperature are registered only in the south. Rainfall is considerable, especially in winter and spring. The rivers Tagos, Douro, Guadiana and Minho are navigable to the Spanish frontier. Flax and southern fruits are large crops. Wine growing is the most noted branch of husbandry, and in the quality of its wine, Portugal is one of the leading wine countries. Port wine receives its name from the city of Oporto where it is still a market product. Madeira wine bears the name of the islands that made it famous. Cork derived from the bark of a species of oak is sent to all civilized lands. The country has great mineral resources, but the industry is backward and the mines are chiefly in the hands of foreigners. Sea salt obtained by evaporation is a large product. The manufactures do not meet the home demand either in quality or quantity. The manufacture of porcelain tiles, inherited from the Moors, is carried on in the larger cities, and these are sold all over Europe. Railroads connect all the chief centers of population, and domestic trade is facilitated by rivers. Much produce is brought in from the colonies, the leading imports being grain, cotton, coal, and timber. The chief exports are wine, cork, salt, copper and fish. Race, Portuguese. Religion, Roman Catholic. Exports (1913, the highest year), $40,761,000; imports, $89,900,000.

The Azores form an archipelago in the north Atlantic Ocean, including three groups of volcanic islands, belonging to Portugal and considered as a part of it. Latitude 40°–37° north, longitude 31° 15′–24° 45′ west; area, 922 square miles; population (1911), 242,613; chief ports, Horta, on Fayal; Augra, on Terceira; and Ponta Delgada, on St. Michael's, 16,179. Submarine cables connect the islands with ports of the United States, Great Britain, and Portugal. Tropical fruit and wine are the principal exports. The position of the islands, 830 miles from Africa and 1,000 miles from the United States, makes them a natural way-station for trans-Atlantic flight.

The Madeira Islands, also a corporate part of Portugal, are

in latitude 33° 15′–32° 30′ north, longitude 17° 30′–16° west; area, 314 square miles; population (1911), 169,777; Funchal, chief town, 24,687 (1911); location, about 360 miles from the African coast and 535 from Lisbon. The inhabitants are Portuguese, often with Moorish or Negro blood in the lower classes. The land is so steep and the rainfall so light that agriculture is difficult, irrigation being largely practiced. Wine and sugar are the chief products. The islands were known to the Phœnicians in the fourteenth century, and were colonized by Prince Henry the Navigator in 1420.

Portuguese East Africa:—see Mozambique, p. 239.

Portuguese Guinea:—see Portuguese Possessions, p. 258.

Portuguese India:—see Portuguese Possessions, p. 258.

Portuguese Possessions.—The colonial possessions occupy 936,264 square miles, with a population of 8,735,854.

Portuguese India consists of Gôa on the Malabar coast, Damão, on the coast 100 miles north of Bombay, and Diu, an island 140 miles west of Damão; area of Gôa, 1,469 square miles, population, 515,772; area of Damão and Diu, 169 square miles, population, 32,700. Salt is the chief product, and manganese is mined somewhat extensively. Imports are three times the value of the exports.

Macao, in China, is on an island at the mouth of the Canton River; area, 4 square miles; population (1911), 74,866.

Portuguese Timor occupies the eastern part of Timor Island in the Malay Archipelago, with some adjoining territory. Latitude 10° south, longitude 125° east; area, 7,330 square miles; population, 377,815. Chief exports, coffee, sandal wood, copra and wax. The port is Delli.

The Cape Verde Islands are fifteen. Latitude 21° 30′–23° south, longitude 25° 30′ to 23° west; area, 1,480 square miles; population, 149,793 (1912). Chief products, coffee, medicinal materials, millet, sugar, fish and straw hats. They have belonged to Portugal since their discovery, 1456.

Portuguese Guinea is on the Senegambian coast west of Africa. Latitude 13°–10° 30′ north, longitude 16° 30′–13° west; area, 13,940 square miles; population, estimated, 289,000; includes many coastal islands. Chief port, Bissau. Chief products, rubber, wax, oil seed, ivory, hides.

Principe and St. Thomas Islands, about 125 miles west of the coast in the Gulf of Guinea, have belonged to Portugal since discovery in 1471. Latitude 0°, longitude 7° east; area, 360 square miles; population (1914), 58,907. The islands are dissected volcanoes, with rich soil. Chief products, cacao, coffee and cinchona. Foreign trade considerable.

Angola, or Portuguese West Africa, occupies a length of 1,000 miles on the coast. Latitude 6°–18° south, longitude 12°–24° east; area, 484,800 square miles; population, 4,119,000; capital, S. Paulo de Loanda. Has been Portuguese since 1575. Chief products, coffee, rubber, wax, vegetable oils, cocoanuts, ivory, oxen and fish. Petroleum and asphalt are worked, and the country is rich in mineral resources. Chief imports, textiles; exports, chiefly to Portugal, coffee and rubber.

Mozambique, or Portuguese East Africa, occupies a strip on the coast from latitude 10° 30′ to 27° 30′ south, longitude 29° 30′–41° east; area, 426,712 square miles; population, 3,120,000; chief port, Mozambique, 362,734 (1910). Products are especially sugar, cocoanuts, wax and minerals, especially gold and coal. Imports are cottons, iron work, liquor; exports, rubber, ores, wax and ivory. Exports (1915), $33,615,000; imports, $10,279,000.

Portuguese Timor:—see Portuguese Possessions, p. 258.

Portuguese West Africa:—see Portuguese Possessions, p. 258.

Principe Island:—see Portuguese Possessions, p. 258.

Raoul (Sunday) Island:—see Kermadec Islands, p. 231.

Rapa Island:—see French Possessions; Australasia, p. 202.

Réunion Island:—see French Possessions; Africa, p. 199.

Revilla Gigedo Islands:—see Mexico, p. 236.

Rhodesia:—see British South Africa, p. 173.

Riau-Lingga Archipelago:—see Dutch East Indies, p. 188.

Rio del Oro and Adrar:—see Spanish Possessions, p. 269.

Rio Muni Settlements:—see Spanish Guinea, p. 269.

Rodrigues Island:—see Mauritius, p. 235.

Rook Islands:—see Bismarck Archipelago, p. 158.

Rotumah Island:—see Fiji Islands, p. 193.

Rumania.—A limited monarchy of eastern Europe. Latitude (1914) 48° 15′–43° 40′ north, longitude 22° 30′–29° 45′ east. The plans of the Peace Conference contemplate giving to Rumania a large area including Transylvania, most of Bukovina and the

adjacent section of Galicia, part of Banat, and some of Hungary proper, and the whole of Bessarabia, and taking away the southern part of Dobrudja, which is ceded to Bulgaria because of a prevailingly non-Rumanian population. It is difficult to forecast the results of the proposed changes; Bessarabia begins at 48° 40′ north, extending to 35° 15′ east, and contains 17,614 square miles and a population of 1,427,500 (1915). Of Banat about two-thirds would appear to be included, or 7,500 square miles; its population may amount to 1,000,000. Bukovina has an area of 4,000 square miles, with a population of 820,000, and nearly all both of land and of people would appear to go to Rumania. The area and population transferred from Hungary are difficult to calculate at the present stage. In general, the territory added to Rumania is that occupied predominantly by Rumanians. Area (1914), 53,490 square miles; population (1912), 7,508,000; capital, Bucharest, population (1914), 345,628; other cities—Jassy, 76,120; Galatz, 72,512. Most of the country is a well-watered plain, with skirts of the Carpathians only in the west and north. The Danube is the chief river, navigable throughout, but of its tributaries only the Pruth is navigable for steamers and the Sereth for rafts. An international commission for the regulation of the traffic of the Danube formerly sat at Galatz. The climate is continental. Seventy-five per cent. of the people are farmers, but primitive methods still prevail. The soil is very fertile, and all products of the temperate zone, and even rice, are raised. The chief crops are maize (the staple food), wheat, barley, oats, rye, tobacco and wine, all produced in excess of the demand. The excess of the crop goes to the congested parts of western Europe. More maize is raised than in any other country of Europe. Domestic animals are bred in large numbers. The mineral wealth is great, but only petroleum and salt are worked extensively on the east of the Carpathians; the larger part of the newly acquired region on the Hungarian side abounds in minerals. The oil wells are among the most important in Europe, and petroleum and its products are much used as power fuel in transportation and manufactures. Flour mills, distilleries and tobacco works are the chief manufactories. Foreign capitalists own all important manufacturing enterprises, so that the Rumanians derive little profit from them. Races, Rumanians, Jews, Magyars, Slavs, Germans, Austrians, Arme-

nians. Religions, Greek Orthodox, Roman Catholic, Protestant, Hebrew and Muhammadan. Grain forms three-fourths of the exports, and imports are mainly textiles and iron goods. Exports from old Rumania (1913), $134,141,060; imports, $118,002,520.

Russia.—Nominally a republic, but much divided and without responsible government. Capital of the Soviet government, Moscow. In 1914, the Russian Empire was constituted as follows:—latitude of northernmost European mainland 70°; of European islands 77° 6′; of northernmost mainland in Siberia 78°; latitude of southernmost European Russia 39° north, of Asiatic Russia 35°. Longitude, European Russia, 17° 30′–65° east; of Asiatic Russia 48° 20′ east–170° west. Area, Europe, 2,122,990; Asia, 6,294,119; total, including 347,468 square miles of inland seas, 8,764,586, or one-seventh of the land area of the earth. Population, Europe, 153,041,100 (1915); Asia, 29,141,500. Since disintegration began in 1917, the following fragments of Russia have declared themselves to be independent or semi-independent states. Certain few are recognized by the Peace Conference as sovereign states; the status of the remainder is quite unknown; Finland, Ukraine, Poland, Lithuania, Courland, Livonia (the last two in part constituting Latvia as now recognized), Esthonia, Bessarabia, Siberia, Caucasus, Don Republic, White Russian Republic, Republic of Turkestan, Kazan Republic, Republic of Georgia, Tauride Republic, Yakutsk Republic.

The Peace Commission has recognized Finland, Esthonia, Latvia, Lithuania and Poland as separate and independent states; Bessarabia has been attached to Rumania. Some of the other states mentioned above are certain to be recognized, the remainder will constitute a revised Russia. An estimate of the losses occasioned by the partition as recognized to date is—area, 298,500 square miles; population, 30,282,800; or 10 per cent. of the area of European Russia, and 20 per cent. of the population. Moreover, the loss includes almost all the industrial population, and much of the mineral wealth. While the average density of population for European Russia is below 75 per square mile, Poland has 280, Bessarabia (agricultural) 157, Vilna 129, and Grodno 141. Other provinces of which only parts have been subtracted, run as high as 254 inhabitants per square mile.

It is convenient to consider Russia under its two main divisions—European and Asiatic.

European Russia is a vast plain interrupted by the Ural range in the east; tundras form the northern plain. The great continental forest belt crosses the country. In the south is the famous "black earth" region, with its great grain fields. Further south are the steppes, divided by the River Don into a well-watered western half, with countless flocks and herds, and an eastern half of a semi-desert nature. The rivers furnish many thousands of miles of navigation. Their value is impaired by the fact that they are frozen from three to seven months in the year. The Volga system has 10,000 miles of navigation; canals connect the rivers and the Caspian and Black Seas with the Baltic. There are many lakes in the northwest, chief among them Ladoga, the largest lake in Europe, half of which belongs to Finland. Russia has every variety of climate found in the temperate zone; polar bears live in the north and lemons ripen in the south. The rainfall is less than in western Europe.

Three-fourths of the people live by farming, but in the greater part of the country the crop yield could be more than doubled by more advanced methods. Russia has surpassed all other European states in the production of wheat, rye, flax and hemp; growing two-thirds of the oats, half the rye, and four-fifths of the flax fiber of the continent. The wealth in timber is enormous; and in spite of poor forestry and wretched roads, timber exports have been very large. Stock farming is a great source of wealth; especially in most developed in the western regions, but flourishing also on the broad steppes of the southwest, where the animals live all the year in the open air. The fisheries are important. Russia is one of the most favored countries in its mineral wealth. Gold, silver, platinum, iron, copper, zinc and salt are the principal minerals worked. Practically all the world's supply of platinum comes from the mines of the Ural Mountains. The coal fields are extensive, but the annual yield is sometimes negligble. Manufacturing has been characteristic largely of the western areas, now lost to Russia; and it is difficult to forecast the immediate industrial future of the country aside from agriculture.

Caucasia and Trans-Caucasia (the former geographically and both administratively, in Europe) are mostly mountainous, save

for wide steppes north of the Caucasus range and fertile valleys and a part of the Armenian table-land in the south. The climate south of the mountains is cooler than north of them. Caucasia is rich in timber and farm products, especially the vine, but domestic animals are more important than agriculture. The mineral wealth is great. Petroleum is the most valuable variety. The wells near Baku supply Russia and a good part of Asia with oil, which also is sold in western Europe. Native manufactures barely meet home demands, but Tiflis and Erivan are distinguished for carpets, embroideries and weapons.

The River Yenisei divides Siberia into a western half, more or less plain, and an eastern and more mountainous half. Siberia has long, hard winters and short, hot summers. The Obi, Irtysh, Yenisei, Lena and Amur rivers are important means of transportation, and many vessels ply on Lake Baikal. The western half of Siberia is more fertile and thickly populated, and is chiefly devoted to agriculture. Cereals, potatoes, onions and melons thrive in southwestern Siberia. The same region contains millions of sheep and cattle. The mineral wealth is considerably developed and widely distributed; gold, silver and graphite being most worked. The great coal field in central Siberia and extensive deposits of iron, lead and copper are still almost untouched. Manufacturing is chiefly confined to tanning, brick-making and ore smelting. The trans-Siberian railway and the rivers supply extensive transportation facilities. All the principal towns are connected by post routes. The chief commercial centers are Tomsk, Irkutsk, Yakutsk and Kiakhta.

Russian Central Asia includes the Kirghiz steppes and Turkestan, the latter being economically more important. The commercial center of Turkestan is the flourishing city of Tashkent. Cotton is the leading export, and the Russian government in the past has endeavored to develop its cultivation. Over 800,000,000 pounds of clean fiber formerly were sent each year to Russian mills. Russian Central Asia has exterior trade relations only with Russia, Siberia and Persia; Indian and Afghan merchants also bringing some British commodities into the markets. The trans-Caspian and the Orenburg railroads are capable of stimulating the economic growth of these possessions greatly.

Russian Possessions.—Bokhara is a Russian vassal state

north of Afghanistan. Latitude 41° 30′–36° 40′ north, longitude 61° 40′–73° east; area, about 83,000 square miles; population, about 1,250,000; capital, Bokhara, about 75,000; other cities—Karshi, 25,000; Heissar, 10,000; no official census.

Bokhara was founded in the fifteenth century. A holy war against Russia about the end of the eighteenth century ended in its absorption by the Russian Empire. It is autonomous and practically independent. Grain, fruit, cattle, silk and tobacco are produced for home consumption. Silk is exported to India. The beautiful rugs and carpets of Bokhara are sold all over the world. Tea, shawls, dyestuffs and drugs are imported from India. The Russian Trans-Caspian Railway passes through Bokhara. There is steam navigation on the Oxus. Statistics of trade are not available. The native people are of Semitic origin; the religion is that of Islam.

Khiva is a vassal state in central Asia. Latitude 43° 40′–40° north, longitude 57°–62° 20′ east; area, 24,000 square miles; population, estimated, 646,000, chiefly nomads; chief towns—Khiva (4,000–5,000), New Urgenj (3,000); chief products, cotton and silk.

Sahara:—see French Possessions; Africa, p. 199.

St. Barthelemy Island:—see Guadeloupe, p. 213.

St. Brandon (Cargados) Island:—see Mauritius, p. 235.

St. Helena Island:—see British Possessions; Africa, p. 162.

St. Kitts-Nevis:—see British West Indies, p. 174.

St. Lucia:—see British West Indies, p. 174.

St. Martin Island:—see Guadeloupe, p. 213.

St. Matthew Islands:—see Bismarck Archipelago, p. 158.

St. Paul Island:—see French Possessions; Africa, p. 199.

St. Pierre Island:—see French Possessions; America, p. 201.

St. Thomas' (St. Thomé) Island:—see Portuguese Possessions, p. 258.

St. Vincent:—see British West Indies, p. 174.

Sakhalin Island:—see Japanese Possessions, p. 227.

Salvador.—The smallest American republic, except Panama. Latitude 14° 30′–13° 15′ north, longitude 90°–87° west; area, 13,176 square miles; population (1916), estimated, 1,271,336, of whom 265,000 are unmixed white blood; capital, San Salvador, 65,148; other cities—Santa Ana, 58,820; San Miguel, 29,374; Neuva San Salvador, 22,423; San Vicente, 25,863; Sonsonate, 14,752. The

constitution was proclaimed in 1824. Salvador became independent of the Central American Federation in 1839. It is the most densely peopled Central American state. It extends along the Pacific coast with a sea frontage of 170 miles. The state is noted for its coffee, of which it has the largest export, except Guatemala. There are hundreds of sugar plantations. Livestock does not fill the demand for domestic animals, and mining is not yet important. Most of the exports are shipped through La Libertad and Acajutla. Great Britain, France and United States have most of the trade. Races, Spanish-American, Indians and mixed bloods. Exports (1917), $10,589,000; imports $2,719,000.

Samoan Islands.—A group of fourteen islands in the South Pacific. Latitude 13°–15° south, longitude 172° 25′–168° west; distant 4,200 miles southwest of San Francisco; area, about 1,075 square miles; population, estimated, 35,000; population of Savaii, the largest island, estimated, 12,800; of Upolu, estimated, 17,000; chief ports, Apia, on Upolu; Paga Paga, on Tutuila. The islands are fertile and highly productive. There are extensive rubber plantations. Tutuila is a possession of the United States; in 1914 the British occupied the other islands which had been a German possession. They are now attached to Australia for administration. Copra is the chief export.

Sandwich Islands:—see Falkland Islands, p. 193.

San Marino.—An independent state and republic within Italian territory. Latitude 43° 55′ north, longitude 12° 25′ east; area, 38 square miles; population (1916), 11,648. San Marino was founded, according to tradition, during the period of the Roman persecution of Christians. It has existed certainly since the fourth century. It is the smallest republic in the world. The city stands on the summit of Monte Titiano, about twenty miles from the Adriatic. The republic, however, is not democratic, as the citizens have no vote. The supreme power is vested in a council of 60 members, the title of Councilor being hereditary in the family. A treaty of friendship, revised in 1914, is in force with Italy. Wine, cattle products, and building stone are exported.

Santa Cruz Islands:—see British Solomon Islands, p. 173.

Santo Domingo.—Negro republic occupying the east end of Santo Domingo or Haiti; area, estimated, 18,045 square miles; population, estimated (1913), 708,000; capital, Santo Domingo,

founded 1497 by Bartolomeo Colombo, brother of the discoverer, population, 22,000; other cities—Santiago (1917), 14,744; Puerto Plata, the chief port, 10,000. The present republic was founded in 1844. The country is mountainous and inland communications are poor. The chief exports are sugar, tobacco, and cacao, 80 per cent. of which goes to the United States. Race, Spanish-speaking Negroes. Exports (1916), $21,851,390; imports, $11,664,500.

Sarawak:—see British Borneo, p. 159.

Savage Islands:—see Cook Islands, p. 184.

Savaii:—see German Samoa, p. 206.

Senegal:—see French Possessions; Africa, p. 199.

Serb-Croat and Slovene State:—see Jugo-Slavia, p. 230.

Serbia:—see Jugo-Slavia, p. 230.

Seychelles Islands:—see British Possessions; Africa, p. 162.

Shantung:—see Kiauchau, p. 231.

Siam.—A monarchy of Indo-China. Latitude 20° 30′–4° north, longitude 97° 30′–106° east; area, about 195,000 square miles, including 45,000 square miles of the Malay Peninsula; population (1916), estimated, 8,820,000; capital, Bangkok, estimated, 630,000. The surface consists of fertile rolling plains; the northwestern part is mountainous. The climate is warm and moist. The larger part of the people live in the wonderfully fertile valley of the Menam, upon whose rise every year the quantity of the rice crop depends. Thus the river bears much the same relation to Siam that the Nile does to Egypt. Siam is one of the great rice-producing countries, the exports being surpassed only by those of Burma and Cochin-China. The forests of the mountain regions contain teak and other timbers. Teak is floated down the Menam to Bangkok, this timber and rice are the two great exports. Tin, rubies, and sapphires are among the mineral products. Most of the commerce is in the hands of Chinese merchants. Bangkok has steamship connection with Europe; but the larger vessels cannot cross the bar at the mouth of the Menam, and much freight therefore is lightered between the ships and the docks about twenty-five miles distant. Considerable machinery is being introduced and the country is increasing in prosperity. Races, mainly Indo-Chinese and Malays. Religion, chiefly Buddhist. Trade especially with United Kingdom, Singapore and Hong Kong. Exports (1916-17), $46,724,530; imports, $33,756,370.

Siberia:—see Russia, p. 261.

Sierra Leone and Protectorate:—see British West Africa, p. 173.

Sikkim:—see India, p. 219.

Singapore:—see Straits Settlements, p. 270.

Sin-Kiang:—see Chinese Possessions, p. 181.

Sir Charles Hardy Islands:—see Nissan Islands, p. 247.

Society Islands:—see French Possessions; Australasia, p. 202.

Sokotra Island:—see Aden, p. 143.

Solomon Islands (German New Guinea):—see Australia, Mandatories of, p. 153.

South America.—Latitude 12° 30′ north–56° 20′ south; longitude 78° 30′–30° 40′ west; area, with islands, 7,681,420 square miles; length, 4,592 miles; extreme breadth, 3,230 miles; population, between 45,000,000 and 50,000,000. Most of the land is south of the equator. The shape of the continent is that of a double triangle, tapering bluntly at the north and gradually at the south, with the larger part of the continent in the equatorial and subequatorial regions. This results in a great preponderance of tropical climate, from which only altitude saves some portions. The continent exhibits extremes of climate, from arid and humid tropical to sub-arctic, which have had a marked effect upon natural resources and human development. Parts can never be redeemed, either from jungle or from sand and rock waste. Other parts are of great productiveness, and under the hand of man have already become the source of great quantities of foodstuffs sorely needed by nations so advanced in development as to be deficient in these commodities. None of the South American countries have developed so far as those of Europe or of North America; but some are farther advanced than any of Africa, or of Asia outside of Japan; and they are capable of traveling the same economic path followed by the United States or the more progressive countries of Europe. In many respects the topography of the continent is broadly similar to that of the United States. It is characterized by several rivers navigable for great lengths, extending possible marine transportation into the center of the land.

South Georgia Island:—see Falkland Islands, p. 193.

South Island:—see New Zealand, p. 244.

South Orkney Islands:—see Falkland Islands, p. 193.

South Polar Region:—see Antarctica, p. 147.

South Shetland Islands:—see Falkland Islands, p. 193.

Spain.—A limited monarchy. Latitude 43° 45′–36° north, longitude 10° 30′ west–4° 30′ east; area, excluding Balearic and Canary Islands, 190,050 square miles; population (1917), 20,747,893; capital, Madrid (1918), 648,760; chief ports, Santander (Bay of Biscay), 72,373; Cadiz (Atlantic), 66,000; Barcelona (Mediterranean), 621,419; other cities—Valencia, 245,871; Sevilla, 164,322; Malaga, 140,975. Spain was a Roman colony in 200 B.C., a Visigothic kingdom in 531 A.D., and a Muhammadan monarchy in 758 A.D. The better-known history of Spain begins with the voyage of Columbus in search of the Indies during the reign of Ferdinand and Isabella. The Spanish peninsula is a high mountainous plateau. In the center are the table-lands of Old Castille and New Castille, dry, unfertile, and better suited for cattle than for tillage. The great lowland plains, the Aragonese in the north, and the Andalusian in the south, are among the most fertile lands of Europe. The rivers are deficient most of the year, and are of little value for shipping. The irrigation canals built centuries ago were permitted to fall into ruin. The government is now repairing the canals and building new ones to serve both irrigation and navigation. The climatic conditions of South Europe are found in the coast districts and in Andulasia. Owing to its high elevation, the plateaus suffer extremes of temperature. Even with the sea on three sides, Spain is deficient in rainfall.

Most of the people are farmers. Apples, pears and southern fruits thrive; in good years the northern provinces export cereals and the southern provinces maize and rice. Olive oil is an important product, and the vine is the most important branch of Spanish husbandry. The warm climate of the south produces the famous wines of Malaga, Alicante and Xeres, of which sherry is the best known. The finest pastures are near the Atlantic, in the northwest, but merino sheep graze on the central table-land. Corks are manufactured in large quantity. Spain is very rich in coal, iron, copper, lead and quick-silver, but most of the mining is done by foreign capitalists and the ore is exported. Only a few hundred tons of iron are produced in Spanish foundries. Barcelona and its vicinity is the home of the greater part of Spanish manufactures. The cotton and metal industries are most prominent there, and cotton, flour, corks and olive oil are the leading

manufactures. The trade of Spain consists mainly in the export of wines, raisins, grain, cotton, and ores, and the import of most of the manufactures consumed. Valencia and Alicante are important ports. Race, Spanish. Religion, Roman Catholic. Exports (1917), $260,669,000; imports, $265,678,000.

The Canary Islands are a group of volcanic peaks belonging to Spain, and administratively a province of it; situated about 200 miles off the coast of Africa. Latitude 29° 30′–27° 30′ north, longitude 18°–13° 30′ west; area, 2,807 square miles; population (1917), 497,995. The islands were commercialized by Phœnician merchants as early as 40 B.C. They became a Spanish possession in 1495. Bananas, other tropical fruits, and wine are the chief products.

The Balearic Islands are a group in the Mediterranean, south of Barcelona and east of Valencia. Latitude 40°–38° 30′ north, longitude 1° 20′–4° 30′ east; area, 1,935 square miles; population (1917), 332,756. Fruit, grain and wine are produced, and fish and lobsters sent to Barcelona. Imports, chiefly from Spain, are cotton, leather, sugar, oil, coal, and timber. First civilized occupants were the Carthaginians; afterwards a Roman holding, passing to the Moors about 800 A.D. For a time they formed a separate kingdom, but were conquered by Spain in 1232. For short periods they have been British.

Spanish Guinea:—see Spanish Possessions, p. 269.

Spanish Possessions.—Besides wielding an influence in Morocco, Spain possesses several areas in Africa, aggregating 88,814 square miles, and having an estimated population of 235,844.

Spanish Guinea (Muni River Settlements). Latitude 2°–1° north, longitude 9° 30′–11° 30′ east; area, 12,000 square miles; population, estimated, 200,000; capital, Santa Isabel, on the Island of Fernando Po (1,185 square miles). In the Gulf of Guinea are also the Islands of Annobon, 6.5 square miles; Little Elobey, 35 acres; Great Elobey, .75 square miles, and Corisco, 5.5 square miles. On the mainland is Rio Muni, 9,800 square miles, of which Bata is the chief center. The mainland region is dense forest; game abounds. There are some plantations, but trade is mainly in natural products—rubber, palm-oil and kernels, and timber. Fernando Po, an exceedingly fertile island, lies north of the other Spanish territory, in latitude 3° 30′ north, longitude 9° east.

Rio de Oro and Adrar stretches south along the Sahara coast from Morocco. Latitude 28° 40′–21° north, longitude 17° 30′–8° 30′ west; area, 73,000 square miles; population, 12,000. It is administered by the Canary Islands; capital, Villa Cisneros. A desert country, with few oases. Inhabitants mainly nomads. Spain began to take an interest in the region in the fifteenth century, as a protection for the Canary Islands to the west. Esparto grass and manzanilla are grown where possible; the natives rear cattle, but horses do not thrive. Fishing, especially for cod, is especially good, and is controlled by the French and Spaniards from the Canary Islands.

Spice Islands:—see Molucca Archipelago, p. 238.

Spitzbergen.—An Arctic archipelago. Latitude 80° 50′–76° 26′ north, longitude 10° 20′–32° 40′ east, comprising five major islands and many smaller ones. The chief island, West Spitzbergen, has an area of 15,000 square miles. The lands are mountainous and heavily glaciated. On account of the climate, no permanent inhabitants have occupied the islands, but temporary colonies from several nations have successively attempted establishment there. It must be said, however, that the climate is less severe than that of Greenland in the same latitude, and the continuous daylight for months at a time would aid in the development of its important minerals. Besides lesser varieties, coal, limestone and iron ore in considerable quantities occur, and form the basis for a possible steel industry of no mean order. This feature engaged the attention of England during the World War, but at that time no active steps were taken. The strategic advantages of the group were seen as well, and British influence in the islands is supplanting that of Norway, which has been dominant of late.

Starbuck Island:—see British Possessions; Australasia, p. 169.

Straits Settlements:—see British Possessions; Asia, p. 165.

Sulphur Islands:—see Japanese Possessions, p. 227.

Sumatra:—see Dutch East Indies, p. 188.

Sunda Islands:—see Dutch East Indies, p. 188.

Sunday Island:—see Kermadec Islands, p. 231.

Surinam:—see Dutch West Indies, p. 189.

Sweden.—The eastern kingdom of the Scandinavian Peninsula. Latitude 69°–55° 45′ north, longitude 11° 15′–24° east; area, 173,035 square miles; population (1917), 5,757,566; capital, Stock-

holm (1917), 408,792; other cities—Göteborg, 191,535; Malmö, 111,823; Norrköping, 55,623. Sweden is mentioned in the Germania of Tacitus, 99 A.D. It was an established kingdom in the time of Harold Fairhair in the tenth century. A union of Sweden and Norway occurred in 1319. Under Charles IX in 1600 it became a recognized monarchy. The final dissolution of the union with Norway occurred in 1905. Sweden is mountainous in the west. The river valleys are on the eastern slope; the chief lowland plain is in the south. These determine the localities of dense population, and the regions of agriculture. The climate is colder than that of Norway; although much of the land is unproductive, half of the people are farmers. Sweden produces more cereals than Norway, but it imports rye and wheat. Livestock are extensively raised in the mountain regions. The government has done much for the intelligent development of dairy farming and the general improvement of agriculture. The fisheries are of considerable importance, but they do not supply the home consumption. The timber trade, on the other hand, is of great value, and the shipments, largely to England and France, are the chief exports. Sweden is poorly supplied with coal, but has large deposits of iron ore in the central and northern parts. Much of the ore is carried by rail to Lulea, a port on the Gulf of Bothnia and thence shipped to England; more is carried to Narvik in Norway for shipment. For want of available coal, Sweden is largely dependent on other countries for textile and other domestic materials. The best-developed manufactures are the iron and wood industries; Swedish matches are everywhere famous. Linen manufactures meet the domestic demand, but the woolen and cotton factories supply only a part of the home need. The manufactories are chiefly workshops, iron and steel plants, and flour and grain mills. Stockholm and Göteborg are the chief ports, and there is a large coastal trade with adequate connections with foreign countries. Sweden has a fine canal system, and railroads connect the chief towns with one another and with Norway. Race, Scandinavian. Religion, Protestant, Catholic, and Hebrew. Trade is mainly with Great Britain, Germany and Russia. The leading imports are minerals, raw textiles, corn and flour; exports, timber, livestock and products, wood pulp and products, metal goods and ores and metals. Exports (1917), $422,327,000; imports, $316,518,500.

Switzerland.—A republic in the heart of the Alps. Latitude, 47° 50′–45° north, longitude 6°–10° 15′ east; area, 15,976 square miles; population (1916), 3,880,500; capital, Berne (1918), 105,000; other cities—Zurich, 213,000; Basel, 137,000; Geneva, 139,500; Lausanne, 71,400. Switzerland is approximately the Helvetia of Cæsar's time. The league of the Swiss people began practically in 1291, and became independent of the Holy Roman Empire in 1648. The constitution now in force was adopted in 1874. Three-fourths of Switzerland is covered with mountains, and most of the inhabitants live on an undulating plain between the Jura Mountains in the north, and the Alps in the south. Several passes afford wagon roads over the mountains to Austria and Italy. Five tunnels, the Arlberg to Autria, and the St. Gotthard, Simplon, Mont Cenis, and Lötschberg to Italy, give uninterrupted connections across Switzerland with the regions north and south. The mountain streams are useless for navigation, but they give abundant power for industrial purposes. The lakes furnish local navigation. The scenery, the great resource of Switzerland, attracts over one million foreigners a year. The climate of the valleys is temperate and the rainfall, chiefly in the form of snow, is heavy.

The state as a whole does not produce enough food for the home demand. The importation of grain, meat, and potatoes is large. The vine is extensively cultivated, but the wine product does not meet the demand. The meadow and mountain pastures have developed stock farming to a considerable extent; and the dairy products are famous, three-fifths of the cheese being exported to all parts of the world. Minerals are of little importance, and as there is no coal, the manufacturing industries would be at a great disadvantage if it were not for the water power. The abundance of water power, used for generating electricity, together with the intelligence of the working classes, has made Switzerland one of the chief manufacturing countries of the world.

The manufactures include the production of cottons, silk, watches, jewelry, machinery, wooden and straw goods and other wares. The products are chiefly those that are distinguished for high quality of workmanship, and Swiss manufactures find markets among all the leading nations. Although Switzerland is far from the sea, the railroads to northern and southern ports serve her commercial relations. Races, German, French, and Italian.

Religion, Protestant, Roman Catholic, and Hebrew. Trade is largely with United States, Great Britain, Austria, Germany, and France. Exports (1916), $489,402,000; imports, $475,600,000.

Syria.—A name applied from very ancient times to the country bordered by Asia Minor and the Taurus Mountains on the north, northern Mesopotamia and the central Arabian desert on the east, Hedjaz on the south, and the Levantine Gulf of the Mediterranean Sea on the west. Latitude 37°–31° north, longitude 34° 15′–41° 30′ east; area (Turkish villayet), 114,530 square miles; population, estimated, 3,675,100. Its southwestern coastal section includes Palestine. Parts have been virtually independent for some time, control by Turkey being slight. All the country is likely to be separated from Turkey, Syria proper and possibly Palestine separately, forming one or two mandatories under the Allied and Associated Powers. The climate is varied, tending in most parts to semi-aridity, and the eastern portion forms the Syrian desert. The country will not, apparently, support a dense population, but may well become an agricultural center of importance under modern guidance. Farming is most primitive. Alexandretta is the northern port, Beirut, 150,000, is the southern; Latakia, from which comes a distinctive Turkish tobacco, is another. Damascus, 250,000, and Aleppo, 250,000, are the chief inland cities. Wheat, silk cocoons, wool, hides, sponges, eggs and fruits are exported. Mineral resources are small. Coal and water-power are scarce or lacking, greatly impeding attempts to introduce manufacturing. Railway communication is poor, but there are several strategic lines; and Aleppo, on the Bagdad railway, is an important center. Roads and trails are poor.

Tahiti:—see Society Islands, p. 267.

Tasmania:—see Australia, p. 152.

Taui Island:—see Admiralty Islands, p. 143.

Tibet:—see Chinese Possessions, p. 181.

Tiensin, Italian Concession:—see Italian Possessions, p. 222.

Timor Archipelago:—see Dutch East Indies, p. 188.

Timor Island:—see Portuguese Possessions, p. 258.

Tobago Island:—see Trinidad and Tobago, p. 274.

Togoland:—see France, Mandatories of; and Great Britain, Mandatories of, pp. 196 and 210.

Tokelau Islands:—see Gilbert and Ellice Islands, p. 208.

Tonga Islands:—see British Possessions; Australasia, p. 169.

Tonking:—see French Indo-China, p. 197.

Transvaal:—see Union of South Africa, p. 275.

Trinidad and Tobago:—see British West Indies, p. 174.

Tripoli and Cyrenaica (Libia Italiana):—see Italian Possessions, p. 222.

Tristan da Cunha Islands:—see British Possessions; Africa, p. 162.

Trois Frères (Eagle) Islands:—see Mauritius, p. 235.

Tubuai Islands:—see French Possessions; Australasia, p. 202.

Tunisia:—see French Possessions; Africa, p. 199.

Turkey.—A despotic monarchy, for many centuries holding territory in southeastern Europe, Asia Minor and adjacent parts of Asia, and in northern Africa. Area (1914), Europe, 10,882 square miles; Asia Minor, 199,272; Armenia and Kurdistan, 71,900; Mesopotamia, 142,250; Syria, 114,530; Arabia, 170,300; making a total of 710,224 square miles. Much of this was held, however, most insecurely, and was virtually independent. The population in 1915 was estimated at 21,273,900, of whom 1,891,000 were in Europe.

Of all this territory, Turkey is expected to lose the greater part. It is probable that all of European Turkey will be divided between Greec and the new state of Constantinople; the latter to have in addition the Asiatic shore of the Bosporus and part of that along the Sea of Marmora. Greece has claim also to a large district in western Asia Minor, of which Smyrna is the focus. Armenia has declared herself separate. Hejaz is now a recognized nation, and the remainder of Arabia is unlikely to remain under Turkish rule. Mesopotamia, once the garden of the world and ruined by Turkish misrule, is expected to be a mandatory under one of the Allied and Associated Powers. Syria, with Palestine, cannot remain Turkish. Indeed, it seems probable that Turkey will soon embrace little more than a part of Anatolia, in Asia Minor.

Turk's Island:—see Jamaica, p. 225.

Tutuila:—see American Samoa, p. 147.

Uganda Protectorate:—see British East Africa, p. 160.

Ukrainia.—The Ukrainian People's Republic was proclaimed November, 1917, separating from Russia and forming one member

of the short-lived Russian Federal Republic. As intended, it was to embrace those parts of southeastern Russia called Little Russia, Southwest Territory and New Russia exclusive of the territory of the Don Cossacks. The state is not recognized by the Allied and Associated Powers as yet. The capital is Kiev (610,000 in 1913). The region is eminently agricultural, a large part being within the "black soil" portion of the great Russian plain. Wheat has been a large export commodity. Coal and iron in considerable quantity are known, and there are several iron and steel works.

Union Islands:—see Tokelau Islands, p. 273.

Union of South Africa.—In 1910, the Union was constituted of the self-governing colonies of the Cape of Good Hope, Natal, the Transvaal, and Orange Free State. They are governed on the whole as a dominion, a Governor General representing the King. The total included area is 473,075 square miles; population (1911), 1,276,242 whites, 4,697,152 blacks, a total of 5,973,394. The occupations are largely agricultural and industrial, and there is a preponderance of dependents over those engaged in any classified occupation. The natural resources, mineral and organic, are very great, and the crude industries are large in scale. Manufacturing has been greatly stimulated by the war. The total exports for 1917 were $143,472,500; imports, $182,381,190.

Cape of Good Hope (Cape Colony).—Latitude 28°–34° 30′ south, longitude 16° 30′–28° east; area of the colony proper, 206,860 square miles; additional territory brings the total to 276,995 square miles; population (1911), 1,554,000 (1,982,588 total); capital, Cape Town (greater), 146,000; other cities—Kimberley, estimated, 30,000; Port Elizabeth, estimated, 31,000; East London, 21,000. Founded by the Dutch in 1652. The British took formal possession in 1814. The original area has been extended by the annexation of West Pondoland, Bechuanaland, and other small additions. A large part of the country comprises semi-arid grazing plains, which have nutritious grasses that support millions of sheep and cattle and many ostriches. Stretching across the southern edge of the province is a zone of excellent lands that produce wheat, maize and other crops of the temperate zone. Thousands of acres are in vines and orchard, the colony being a large producer of wine and fruits. Large quantities of these are sent in cold

storage to Europe as early as February and March. Four-fifths of Cape Colony needs artificial irrigation, and projects for this purpose are developing. The autumn rains provide much water. Wool-growing is the largest grazing industry, and ostrich feathers from domesticated birds are derived chiefly from this region. The Angora goat yields large quantities of mohair. The diamond mines at Kimberley practically monopolize the world's trade. The exports, wool, mohair, hides, diamonds, ostrich feathers, and fruits, are sent to British countries. The imports are cotton goods, steel products and machinery. The ports of Cape Town, East London and Port Elizabeth are connected with stations on the Zambezi River about 1,700 miles distant. The trunk line is a part of the "Cape to Cairo" railway now partly completed. The white population are mainly English-speaking and Dutch-speaking; they constitute about one-third of the whole. The natives belong to the Black Race. Religion, Protestant.

Natal.—A maritime province on the Indian Ocean. Latitude 26° 30′–31° south, longitude 29°–33° east; area, including Zululand (10,424 square miles), 35,290 square miles; population (1911), 1,194,043; capital, Pietermaritzburg, commonly called Maritzburg, 30,555; seaport, Durban, commonly called Port Natal, 69,187; other cities—Ladysmith, Newcastle, and Dundee—no official figures of population. In his search for an all-water route to India, Vasco da Gama sighted the bluff at the entrance of Durban harbor, in 1497. In the latter part of the seventeenth century English ships occasionally called at Port Natal for ivory. Boer prospectors established trading posts in various parts of the province early in the nineteenth century. It was annexed to Cape Colony in 1844.

Natal is essentially an agricultural province. Maize and kaffir corn are grown wherever the land is arable; the cattle and sheep ranges are extensive; tea, coffee, and cotton are grown in the lowlands. The mineral wealth is great, including copper, silver, lead, and gold. There are valuable coal measures and these already furnish most of the local supply. Railways connect Durban and Maritzburg with practically all the commercial centers of South Africa. Ladysmith is the chief center of convergence. Most of the trade is carried on with the United Kingdom. Maize, wool, hides and other cattle products are the chief exports.

Transvaal Province.—A state now included in the Union of

South Africa. Latitude 22°–28° south, longitude 25°–32° east; area, 110,426 square miles; population (1911), 1,686,212, of whom one-third are Europeans; capital, Pretoria, 29,618; mining center, Johannesburg, 237,104. The Transvaal was colonized by Boers, who left Cape Colony in 1836. On account of trouble with the natives the region was annexed to Great Britain in 1877. In 1881 independence was given to the state. In 1900 the war between the Boers and the British ended with the formal annexation to Great Britain. The Transvaal is situated on the high interior plateau of South Africa, 4,000 to 6,000 feet above the sea. A widespread plain in the interior and smaller plains scattered through the country give the state considerable agricultural land. The plateau is higher in the south than in the north, and the climate, temperate in the south and center, is tropical in the north. No rivers are available for navigation. The plains are the home of most of the Boers, who are among the most thrifty cattle-growers in the world. Maize, tobacco, and meat are grown for export. Truck and dairy farming in the mining regions is a profitable industry. Gold is the greatest mineral resource, and the mines are scattered through the eastern and southern parts of the colony. The Witwatersrand, on which Johannesburg stands, is one of the most productive gold-producing regions in the world. Diamonds are mined near Pretoria, and the diamond fields rank next to those of Kimberley. At least 5,000 square miles are underlain by coal, of an average thickness of six feet. Gold, diamonds, and tin ore are the chief exports. Railroads extend from Johannesburg to the various South African ports. Races, Boers, British, native blacks and Chinese laborers.

Orange Free State.—Latitude 26° 30′–30° 45′ south, longitude 24° 30′–30° east; area 50,389 square miles; population (1911), 528,174; capital, Bloemfontein, 26,925, of whom about one-half are black. Originally peopled by Bantu tribes; settled by Boers, or farmers of Dutch descent about 1824; a provisional republic was established in 1836. It was formally annexed to Great Britain at the time of the Boer war, in 1900, under the name of Orange River Colony. As it stands on the high plateau of inner South Africa its climate is temperate and healthful. The state is best adapted for stock raising; wheat and other farm crops are grown in the south. Bloemfontein is a health resort, famous not only on account of its fine water supply, derived from a spring, but also because of its

pure air. A considerable part of its population consists of invalids from Europe. Wool is the chief product and, with hides and other cattle products, forms the bulk of the exports. Some diamonds are mined, but the mineral industries are little developed. Races, Boers, natives of Bantu stock and British. Religion, Protestant.

Union of South Africa, Mandatory of.—Only one mandatory over ex-German colonies has been given to the Union by the Peace Conference.

German Southwest Africa. Latitude 17°–29° south, longitude 12°–25° 30′ east; area, 322,450 square miles; population, 94,386. A large part of the country is desert, some of it irrigable. Industries are backward, but cotton, silk and tobacco engage many people. Stock raising is the chief occupation. Valuable minerals are known, but mining is slight. Exports (1912, the highest year), $9,763,335; imports, $8,124,720.

United States of America.—A republic situated mainly in central North America, but with territories, dependencies, and naval stations in various parts of the world. Latitude of main body 49°–24° north, longitude 66°–125° west, although the extreme western island of Alaska is approximately longitude 170° east.

The Aleutian Islands (Catherine Archipelago) extend about 1,200 miles from Alaska toward Kamchatka.

	Capital	Area	Population *
Continental body	Washington	3,026,789	103,500,000
Alaska	Juneau	590,884	66,400
Philippine Islands	Manila	120,000	8,937,00
Porto Rico	San Juan	3,606	1,118,012
Hawaii	Honolulu	6,449	322,900
Canal Zone		448	61,300
Virgin Islands	Charlotte Amalie	240	26,000
American Samoa		77	7,300
Guam	Aguña	210	13,700

* Estimated 1918

The growth of area of the United States began practically at the close of the French and Indian war by the treaty of Paris, in 1763. The English colonies gained the territory between the Appalachian Mountains and the Mississippi River. The subsequent gains are as follows:

The Louisiana Purchase, west of the Mississippi River, 1805

The Florida country, ceded by Spain, 1819

Texas, annexed, 1845

The Mexican War cession, 1848

The Gadsden purchase, 1853

The Oregon country, acquired by discovery, exploration, and treaties with Spain and Great Britain

Alaska, purchased from Russia, 1867

Hawaiian Islands, annexed, 1898

Philippine Islands, Porto Rico, Guam and other islands, acquired by conquest, 1898

Tutuila, acquired by conquest in 1898, treaty in 1900

Canal Zone, acquired by treaty with Panama, 1903

The principal physical regions of the United States are also industrial regions. The Atlantic Coastal Plain, New England Plateau and Appalachian Mountains include the most important centers of manufacture and commerce. This is due in part to contiguity to European markets, in part to good harbors, and in part to an abundance of power—water, hydroelectric, and fuel. The chief ports of this region are located at tidewater near the heads of river estuaries or other bays protected from ocean storms. The manufacturing centers are at places convenient to natural water power, hydroelectric power, or to cheap power fuel. The principal ports and their exports are: Portland, cattle products, grain; Boston, leather products, foodstuffs, cotton manufactures; the port of New York (including the New Jersey shores), the foremost shipping port in the world, grain, flour, cotton, tobacco, preserved foods; Philadelphia, coal and manufactures; Baltimore, coal, grain, fishing products; Norfolk and Richmond, cotton and tobacco; Charleston, cotton; Savannah, cotton and foodstuffs; Jacksonville, fruit and produce; Tampa, tobacco and cigars; Mobile, cotton, fruits, and produce; New Orleans, cotton and produce; Galveston, cotton. The coastal plain and cultivable land in the vicinity of these ports are characterized by garden truck and dairy farms. The larger cities in the interior of the eastern region—Pittsburg, Reading, Providence, Syracuse, Rochester, Lowell, Scranton, Fall River, Worcester, Bridgeport, New Haven, Newark, Trenton, and Wilmington—are mainly manufacturing centers, making machine-shop products, textiles, clothing, paper,

oil products, refined metals, metal wares, machinery, chemicals, munitions, and patent food products. In the Appalachian region, where cheap fuel is at hand, the manufactures of steel for building purposes, wire, and sheet metal predominate. The eastern region supplies all the United States with its manufactures and a considerable part of the rest of the world in addition.

In the great central plains, extending from the northern boundary to the Gulf of Mexico, agriculture is the chief industry. From the northern boundary to the Ohio River, and from the Appalachian Mountains to the arid plains west of the Missouri River, the production of wheat, corn, oats and grass is the important industry. The wheat supplies that part of the country east of the Rocky Mountains with flour, and includes a surplus which is sold mainly in western Europe. The corn crop for the greater part is converted into pork, which supplies not only the United States, but includes also shipments to western Europe and to tropical countries where fresh meat is not always to be obtained. The oat crop is consumed mainly where it is grown. A considerable part is used in the manufacture of oatmeal, the demand for which is increasing. The grass is converted into meat and dairy products, the home demand for which does not much exceed the supply.

The chief market centers of this region are Chicago, Minneapolis, St. Paul, Buffalo, Cleveland, Cincinnati, St. Louis, the Kansas Cities, Indianapolis, and Omaha. These cities are among the world's greatest food markets; Louisville is the principal tobacco market; and Duluth is one of the greatest ore markets. These cities are manufacturing centers as well, the manufactures being connected chiefly with farm machinery, automobiles, and food products. Indeed, manufacturing in the North Central States is competing actively with the east.

The southern part of the great central plain produces cotton, sugar, rice, and tobacco for commercial purposes, and ordinary foodstuffs for home consumption. Quick transportation has extended truck-farming for northern cities into this region, with the result that they now begin to receive spring vegetables in February instead of in May. The yearly cotton crop varies from one-half to three-fourths of the world's crop. A part of it is manufactured into cloth in the mills of southern cities; a considerable part goes to the mills of the New England and Middle Atlantic States; the

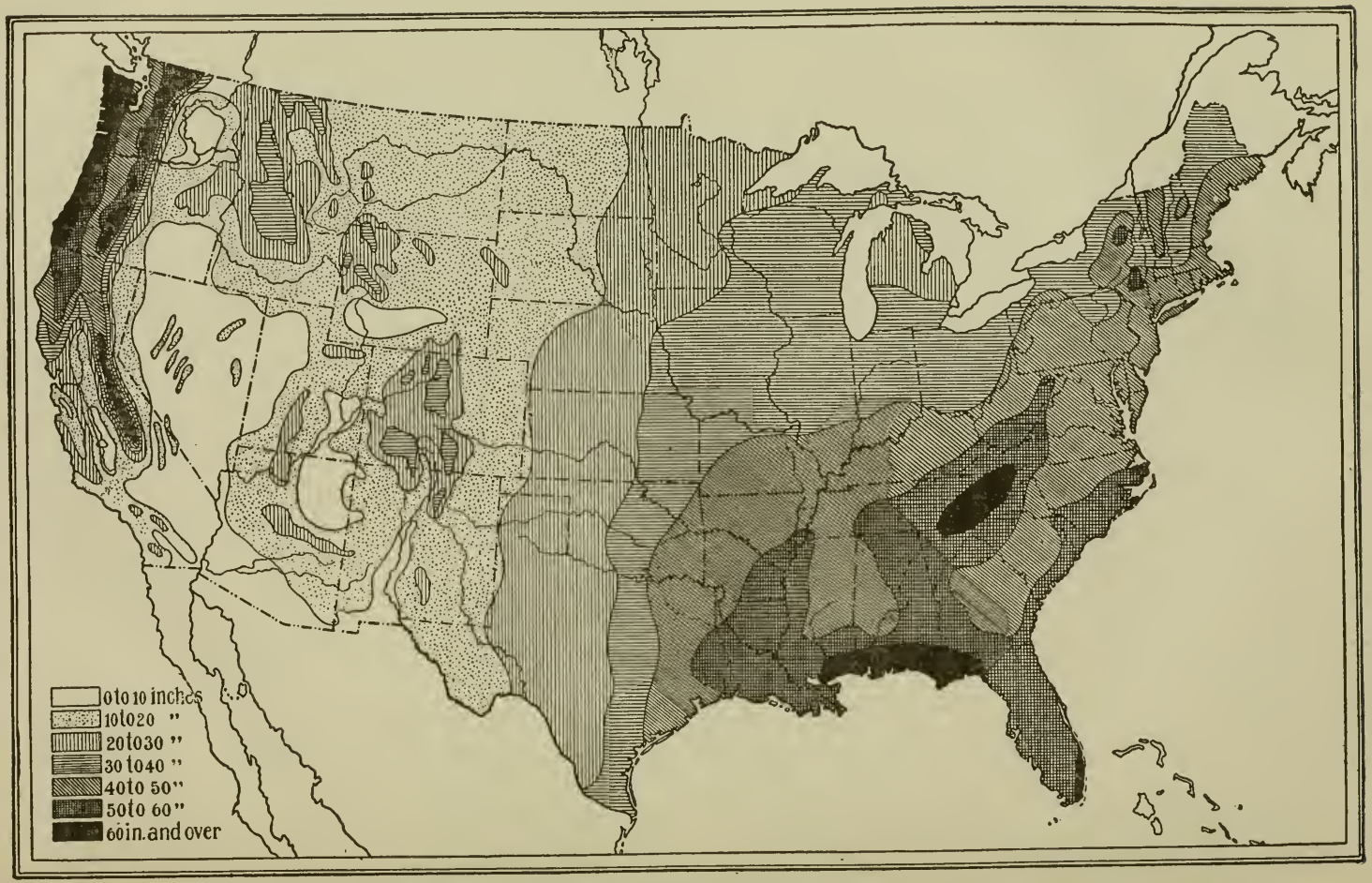
rest is carried eastward as far as the Ural Mountains and westward into Japan and China. It is normally the chief money crop of the United States. Among the cities of this group of states are Atlanta, Nashville, Chattanooga, Memphis, Oklahoma, Dallas, Vicksburg—all engaged in the collection, manufacture, and marketing of the products of the region.

The western highlands from the Rocky to the Sierra Nevada Mountains are the metal mining and grazing region of the United States. Because of its rugged surface not much of the land can be cultivated; in the southern part, because of light rainfall, much of it is a desert. For these reasons its food-producing power is low and it is therefore sparsely peopled. The grazing region and the great cattle ranches are in the north. Denver, Butte, Helena, South Pueblo, and Great Falls are centers of mining interests and ore-reduction works; Cheyenne is the chief point of cattle trade; Salt Lake City is the market of an agricultural region. Irrigation projects have brought more than one million acres of the western highlands under cultivation.

The Pacific Coast States are marked by mildness of climate. The seasons are two—rainy winters and dry summers. Practically every part has enough rain for an abundance of crops. The broad intermontane valleys produce wheat; the foot-hills yield apples, oranges, cherries, apricots, and lemons that pay for shipment to the cities of the Atlantic States. The ports of the Pacific coast are few in number, but the harbors of Puget Sound, San Francisco Bay, and San Diego Bay are big enough and deep enough to shelter the commerce carriers of the nation. Seattle, Portland, San Francisco, Los Angeles, and San Diego are the chief ports. Much of their trade is with Japan, China, and Australia.

The mineral resources of the United States as a whole surpass those of every other country. In the production of iron and copper, the United States stands at the head. In the production of gold, silver, lead, zinc, and quick-silver, the yearly output many times has been first. In coal, petroleum, and other power fuels the United States is far in the lead.

The railway transportation system is quicker and cheaper than that of any other country. Until the beginning of the World War, the cost of railway transportation was about three-quarters of a cent per ton-mile, a rate less than half that on European railways.



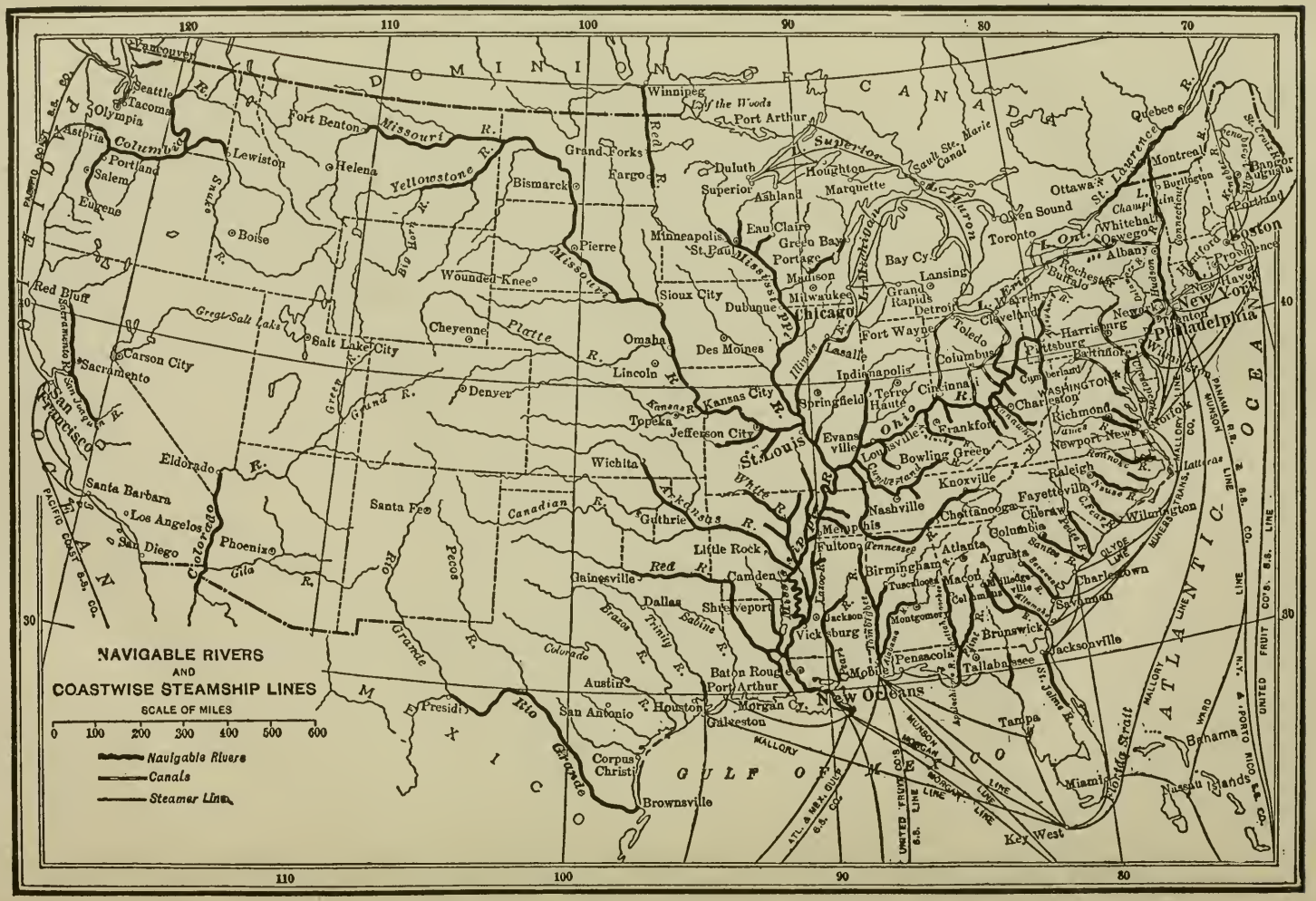
RAINFALL IN THE UNITED STATES

Practically all freight moves as fast freight. Trunk lines from every important city in the east connect with the various transcontinental lines that reach Pacific ports. In 1919 the railways had an aggregate length of more than 260,000 miles. The railway across the Isthmus of Panama is owned and operated by the federal government; a railway from Resurrection Bay, Alaska, to Fairbanks is under construction by the federal government. During the World War the federal government took over the operation of practically all railways in the United States.

River and canal transportation in the United States is relatively undeveloped. The Mississippi and its tributaries afford not far from 12,000 miles of navigable water; other rivers aggregate a possible 8,000 miles in addition. Most of the canals have been abandoned. The Erie Canal, previous to its reconstruction into a barge canal, had lost much freight traffic; its future possibilities are great. The St. Mary's Falls Canal (Sault Ste. Marie or "Soo"), connecting Lake Superior and Lake Huron, on the other hand, carries more freight than any other canal in the world. In the future both civil and commercial necessities will undoubtedly lead to the development of more extensive inland water transportation, which for slow freight can be made far cheaper than railway transportation.

Railway transportation is being made more effective in many localities by the use of electricity, generated by water power or by coal of too low fuel power to be carried to consumers. Motor trucks have shown their value in carrying local freight over short lines. Their advantage is quick and direct delivery. Railway trunk lines rarely handle local freight quickly unless it can be carried in carload lots. The cost in stopping and starting a train is sometimes greater than the amount received for a consignment. Airplane routes are being carefully mapped throughout the country, but as yet only a few are in operation.

The foreign business of the United States before the World War amounted to about two and one-half billion dollars yearly. The exports usually exceed the imports—that is, the balance of trade usually was in favor of the country. The government expenditures were about one billion dollars and these were met by import taxes on foreign goods. The prosecution of the war cost more than fifty billion dollars; the national debt which, July 1,



NAVIGABLE RIVERS AND COASTWISE STEAMSHIP LINES

1917, was less than three billion dollars, on July 1, 1918, was more than twelve billion dollars.

In the twenty-five years preceding the World War the character of the foreign business of the United States did not change much. The imports consisted mainly of fine textiles and manufactured goods which, on account of the high cost of labor in the United States, could be made more cheaply abroad. Among foodstuffs, sugar, chocolate, bananas, lemons, and wines have been imported in large quantities. Among other imports were dyes, chemicals and toys. Since the war these, for the greater part, have been made in the United States. For the past half century wheat products, meats, raw cotton, cotton textiles, metals, and coal oil have been leading exports. In the future it is likely that the export of manufactures will increase because of new and wider markets, while the export of foodstuffs will decrease because of the increase of population. During the past quarter of a century the increase in population has been a little more on the average than one million per year.

Of late, the exports and imports have nearly balanced; for instance, they were each about $6,150,000,000 in 1917. The year 1918, however, shows a very heavy credit—exports, $5,928,285,641; imports, $2,946,059,403.

United States; Outlying Territories.—Of the outlying regions that are a part of, or dependent upon, the United States, the following are described separately:—Alaska, Hawaii, Porto Rico, Philippine Islands. Other smaller areas are noted below.

The American Virgin Islands lie about 50 miles east of Porto Rico. Latitude 48° 30′–47° 45′, longitude 65°–64° 30′ west. The islands of St. Croix, St. Thomas and St. John, originally Danish, were purchased by the United States in 1916. St. Thomas, 28 square miles; St. Croix, 84 square miles; St. John, 20 square miles; total population, estimated, 23,000, chiefly Negroes. Sugar-cane, cotton, fruit and vegetables are the products.

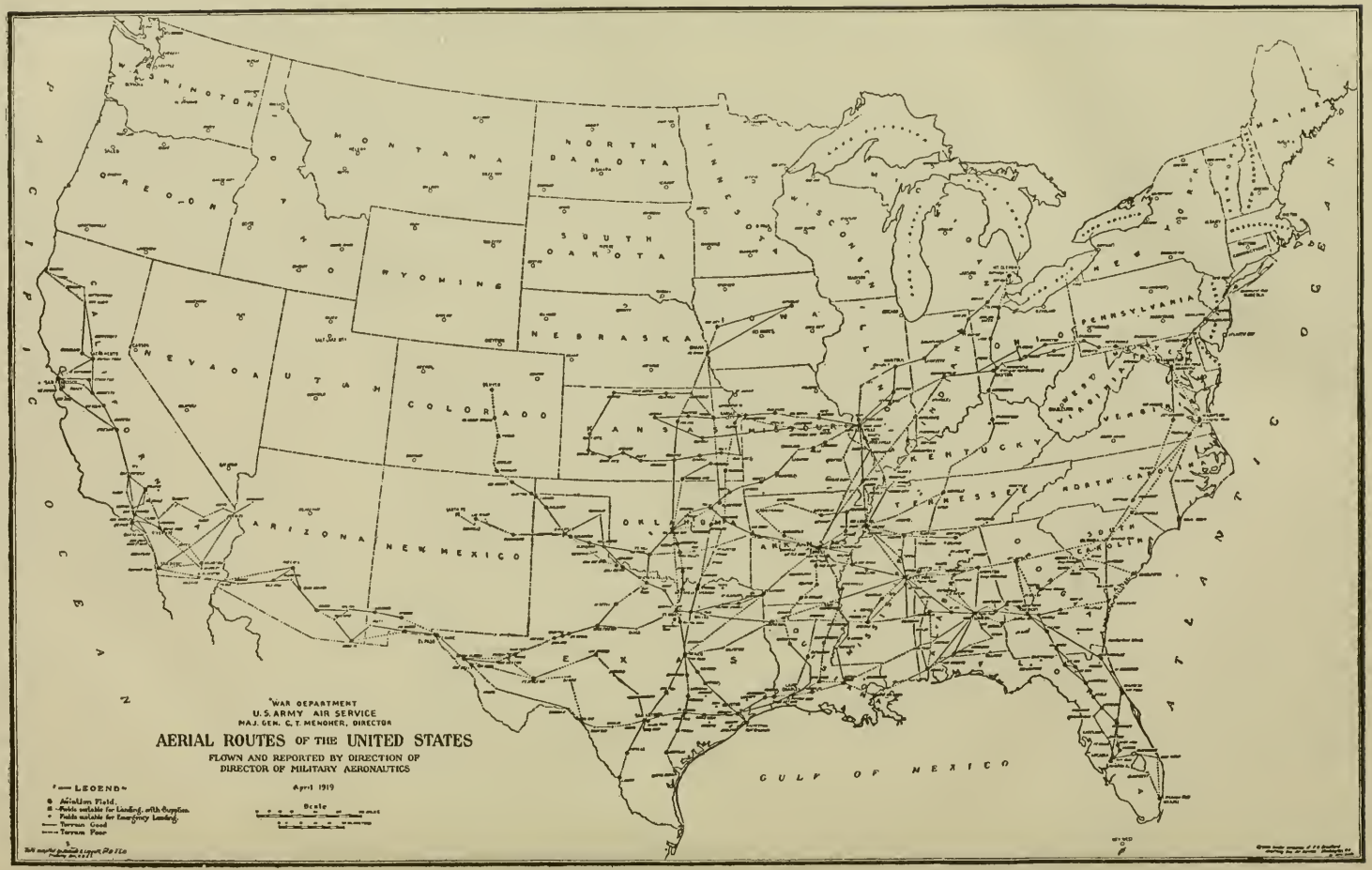
Panama Canal Zone; area, 448 square miles; population (1915), estimated, 65,000; capital, Panama, estimated, 40,000; Colon, estimated, 15,000. By virtue of a treaty with the Republic of Panama, a strip of land five miles in width on each side of the Panama Canal was granted in perpetuity to the United States in order to provide facilities for the construction of the canal. Over this

PRINCIPAL RAILROADS AND STANDARD TIME BELTS

strip, exclusive of the cities of Panama and Colon, the federal government has exclusive control for police, sanitary, judicial and commercial purposes. The sum of $10,000,000 was paid for the possession of the zone and by the terms of the treaty the United States pays a yearly rental of $250,000. The Pacific terminal of the canal is Port Ancon (Balboa); the Atlantic terminal is Cristobal. The World War undoubtedly prevented the growth in canal traffic that has been expected; and the value of the waterway to world commerce must be judged by the history of the next few years.

Guam is the largest and most populous island of the Mariana (Ladrone) Archipelago. Latitude 13° 26′ north, longitude 144° 43′ east; area, about 225 square miles; civil population (1916), 13,916, of which only 219 were white; seat of administration, Agaña; port of entry, Piti. Guam is a naval base of the United States, which was acquired from Spain by the treaty of Paris, 1898. The highest land is only 1,274 feet above the sea. A mountain chain extends near the southern coast; the rest of the island is mainly a plateau heavily forested with cocoanut groves, maize, taro, and garden truck planted in narrow strips along the sea. The interior of the island has not been cultivated, but the southern half is well adapted for cattle, and the northern half for coffee, cacao and cocoanuts. The climate is healthful and pleasant, the heat being tempered by sea breezes. Rainfall is heavy between June and December, and the island is occasionally visited by severe typhoons. The native inhabitants are mixed Chamorro and Tagal blood, not unlike the Filipinos. The most valuable crop is the cocoanut (copra). Sugar, coffee, cacao, rice, and maize also are cultivated, and much wild timber can be used. About 6,000 head of cattle are kept. There is a small export trade, and imports in 1916-17 amounted to $286,651. The commerce is very small; the development of copra-drying is becoming a source of prosperity.

American Samoa consists chiefly of Tutuila, a small island in the eastern part of the Samoan group. Latitude, approximately, 14° south, longitude 171° west; area, about 77 square miles; population (1916), 5,885. Included with Tutuila are the Manua group of three small islands about 60 miles eastward; area, 25 square miles; population, 1,665. The islands are delightful as to scenery and climate. Tutuila is a naval station of the United States, the



AERIAL ROUTES OF THE UNITED STATES

commandant being also the governor of the islands. In 1900, Great Britain and Germany renounced their claims to all the islands east of 171° west longitude in favor of the United States. Copra is exported. Pagopago, the harbor of Tutuila, is a coaling station. As a strategic position in the Pacific, its importance is second to Hawaii only.

Baker Island is an outlying island of the Phœnix group. Latitude 0°, longitude 176° west. The island, known also as Nantucket, was formally recognized as United States territory about the time of the Spanish-American War, 1896. It is about 1,800 miles southwest of Hawaii, and at one time was noted for its store of guano.

Wake Island is an unoccupied volcanic peak belonging to the United States. Latitude 19° north, longitude 166° 45′ east. It is valuable for strategic purposes only.

Upolu:—see German Samoa, p. 206.

Upper Senegal—Niger:—see French Possessions, p. 199.

Uruguay.—A republic of South America. Latitude 30°–35° south, longitude 57° 40′–53° 30′ west; area, 72,153 square miles; population (1917), 1,378,808; capital, Montevideo (1918), 376,163; other cities—Paysandu, 21,000; Salto, 19,800. Uruguay was formerly a part of the Spanish possessions of Rio de la Plata, and afterwards a province of Brazil. Its independence (1825) was affirmed by the treaty of Montevideo in 1828. The country is a wide, grassy plain, intersected by a few low mountain ranges. The climate is temperate, the rainfall plentiful; the soil is excellent for grass and grain. The position of Uruguay for trade is very favorable, as the sea forms most of its boundaries, and its rivers, La Plata and Uruguay, are navigable. The land, mostly in large estates, is devoted to pastoral pursuits. Its largest industry is grazing, and most of the cattle are turned into jerked beef, which is exported to several Latin-American countries. The manufacture of meat extracts at Fray Bentos is also a large business. Millions of sheep thrive, and the exports of wool to Europe and the United States are usually large. In addition to the vegetable foods consumed at home, wheat and flour are important exports to Europe and Brazil. Flax, raised for linseed, is also an important export. The chief towns have railroad communications with Montevideo, which is connected by steamship lines with Europe and the United States. The mineral resources are little utilized, and coal is a large import. Races, Spanish-American, Spanish,

Italian, and Brazilian. Religion, Roman Catholic. Trade is chiefly with France, Great Britain, Argentina, United States and Italy. Exports (1916-17), $67,515,275; imports, $37,212,230.

Vancouver Island:—see Canada, p. 176.

Vanua Levu Island:—see Fiji Islands, p. 193.

Venezuela.—A republic bordering the north coast of South America. Latitude 12°–1° north, longitude 73° 40′–59° 40′ west; area, estimated, 398,594 square miles; population (1917), estimated, 2,827,762; capital, Caracas, estimated, 72,429; other cities—Barquisimeto, 27,000; Maracaibo 48,500; Valencia, 58,387, all estimated and only approximate. Puerto Cabello is the chief port of call for most American steamships; La Guaira is the port of Caracas with which it is connected by railway. Venezuela seceded from New Granada, now Colombia, in 1830. The present constitution became effective in 1914. The Orinoco, which drains most of the country, is navigable to the rapids at the western border.

The northern and southern parts of the republic are mountainous. Between them stretch the wide llanos, or prairies, covered with grasses and adapted for cattle raising. The climate is tropical, with dry and rainy seasons; it is oppressively hot on the coasts. The soil is fertile, but little advantage is taken of this source of wealth. Coffee and cacao plantations, mainly in the foothills, are of great importance, and the chief exports are their products. Gold is mined in various parts of the republic, but chiefly in the Yuruari River district. Petroleum and asphaltum are abundant but the resources are not developed. Asphalt from Lake Bermudez has been exported to the United States. Coffee, cacao, and cattle products are the chief exports. Silver and copper are found, but the mining industry is not commensurate with the wealth in these resources. Political revolutions have retarded the development of the country. The foreign trade is chiefly in the hands of foreigners, and the great preponderance is with the United States. Races, Spanish-American and Indian. Religion, chiefly Roman Catholic. Exports (1915-16), $24,968,700; imports, $17,712,000.

Victoria Island:—see British Possessions; Australasia, p. 169.

Virgin Islands.—A group of volcanic islands about 50 miles east of Porto Rico. Latitude 18° 45′–17° 40′ north, longitude 65°–64° 30′ west. The native population consists chiefly of Negroes.

Several islands belonging nominally to the group, situated near Porto Rico, became possessions of the United States at the close of the war with Spain. Of these Culebra and Vieques are the most important. The Danish Virgin Islands, St. John, St. Croix, and St. Thomas, were purchased by the United States in 1917 as a West Indies naval base; area, 240 square miles. The northerly islands of the group belong to Great Britain. Charlotte Amalie, the administrative seat of the American islands, has one of the best harbors in the West Indies. Road Town is the headquarters of the British islands. Cattle products, fiber plants, aloes, and fruits are the chief exports.

Viti Levu Island:—see Fiji Islands, p. 193.

Wadai:—see French Possessions; Africa, p. 199.

Wake Island:—see United States, Outlying Territories, p. 285.

Wallis Archipelago:—see New Caledonia, p. 243.

Washington Island:—see Gilbert and Ellice Islands, p. 208.

Weihaiwei:—see British Possessions; Asia, p. 165.

Wellesley Province (Penang):—see Straits Settlements, p. 270.

West Falkland Island:—see Falkland Islands, p. 193.

West Indies.—The above-water parts of a partly-submerged mountain system extending from Yucatan to the north coast of South America, inclosing the Caribbean Sea. They are conveniently divided into the Greater and the Lesser Antilles. The latter are also divided into the Leeward and the Windward Islands.

Wilson Islands:—see British Solomon Islands, p. 173.

Windward Islands:—see British West Indies, p. 174.

Yanaon:—see French India, p. 197.

Yemen.—Formerly a vilayet of Turkey, lying on the west coast of Arabia, now independent as a result of the disintegration of the Turkish empire. Latitude 18°–12° 35′ north, longitude 42°–47° east; area, 73,800 square miles; population, 750,000. Asir lies on the north, Aden on the south, and the high desert of Nejed on the east. The lowland is tropical desert, the highlands fairly well watered. The natives occupy a number of villages, and at least two trading ports. Much of the small commerce passes through Aden. Part of the country is perhaps the best in Arabia. Most of the population are engaged in agriculture. See also Arabia.

Zanzibar Protectorate:—see British East Africa, p. 160.

APPENDIX

TREATY OF VERSAILLES—JUNE 28, 1919

The Treaty of Versailles was signed by the peace plenipotentiaries of Germany and of twenty-six Allied and Associated Powers on June 28, 1919. The United States of America, the British Empire, France, Italy and Japan, are described in the treaty as the principal Allied and Associated Powers; Belgium, Bolivia, Brazil, China, Cuba, Ecuador, Greece, Guatemala, Haiti, the Hejaz, Honduras, Liberia, Nicaragua, Panama, Peru, Poland, Portugal, Rumania, the Serb-Croat-Slovene State; Siam, Czechoslovakia and Uruguay, constitute with the principal powers mentioned above the Allied and Associated Powers of the one part; and Germany, of the other part. At the request of the Imperial German Government an armistice was granted on November 11, 1918, to Germany by the principal Allied and Associated Powers in order that a treaty of peace might be concluded, bring to a close the World War which originated in the declaration of war by Austria-Hungary on July 28, 1914, against Serbia; the declaration of war by Germany against Russia on August 1, 1914, and against France on August 3, 1914.

Original Text of Covenant of the League of Nations

The epoch-making event resulting from the World War and the Treaty of Versailles is in the "Covenant of the League of Nations," the foundation upon which the Peace Treaty is constructed. It creates within itself a new epoch in human relationship. Its historical significance is such that the original text is here recorded in full (as signed by the peace delegates on June 28, 1919).

The high contracting parties, in order to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war, by the prescription of open, just and honorable relations between nations, by the firm establishment of the understandings of inter-

national law as the actual rule of conduct among Governments, and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organized peoples with one another, agree to this covenant of the League of Nations.

Article 1.—The original members of the League of Nations shall be those of the signatories which are named in the annex to this covenant and also such of those other States named in the annex as shall accede without reservation to this covenant. Such accession shall be effected by a declaration deposited with the secretariat within two months of the coming into force of the covenant. Notice thereof shall be sent to all other members of the League.

Any fully self-governing State, dominion, or colony not named in the annex may become a member of the League if its admission is agreed to by two-thirds of the assembly, provided that it shall give effective guarantees of its sincere intention to observe its international obligations, and shall accept such regulations as may be prescribed by the League in regard to its military, naval and air forces and armaments.

Any member of the League may, after two years' notice of its intention so to do, withdraw from the League, provided that all its international obligations and all its obligations under this covenant shall have been fulfilled at the time of its withdrawal.

Article 2.—The action of the League under this covenant shall be effected through the instrumentality of an assembly and of a council, with a permanent secretariat.

Article 3.—The assembly shall consist of representatives of the members of the League.

The assembly shall meet at stated intervals and from time to time as occasion may require at the seat of the League or at such other place as may be decided upon.

The assembly may deal at its meetings with any matter within the sphere of action of the League or affecting the peace of the world.

At meetings of the assembly each member of the League shall have one vote, and may have not more than three representatives.

Article 4.—The council shall consist of representatives of the principal Allied and Associated Powers, together with representatives of four other members of the League. These four mem-

bers of the League shall be selected by the assembly from time to time in its discretion. Until the appointment of the representatives of the four members of the League first selected by the assembly, representatives of Belgium, Brazil, Spain and Greece shall be members of the council.

With the approval of the majority of the assembly, the council may name additional members of the League whose representatives shall always be members of the council; the council with like approval may increase the number of members of the League to be selected by the assembly for representation on the council.

The council shall meet from time to time as occasion may require, and at least once a year, at the seat of the League, or at such other place as may be decided upon.

The council may deal at its meetings with any matter within the sphere of action of the League or affecting the peace of the world.

Any member of the League not represented on the council shall be invited to send a representative to sit as a member at any meeting of the council during the consideration of matters specially affecting the interests of that member of the League.

At meetings of the council, each member of the League represented on the council shall have one vote, and may have not more than one representative.

Article 5.—Except where otherwise expressly provided in this covenant or by the terms of the present treaty, decisions at any meeting of the assembly or of the council shall require the agreement of all the members of the League represented at the meeting.

All matters of procedure at meetings of the assembly or of the council, including the appointment of committees to investigate particular matters, shall be regulated by the assembly or by the council and may be decided by a majority of the members of the League represented at the meeting.

The first meeting of the assembly and the first meeting of the council shall be summoned by the President of the United States of America.

Article 6.—The permanent secretariat shall be established at the seat of the League. The secretariat shall comprise a Secretary General and such secretaries and staff as may be required.

The first Secretary General shall be the person named in the annex; thereafter the Secretary General shall be appointed by the council with the approval of the majority of the assembly.

The secretaries and staff of the secretariat shall be appointed by the Secretary General with the approval of the council.

The Secretary General shall act in that capacity at all meetings of the assembly and of the council.

The expenses of the secretariat shall be borne by the members of the League in accordance with the apportionment of the expenses of the International Bureau of the Universal Postal Union.

Article 7.—The seat of the League is established at Geneva.

The council may at any time decide that the seat of the League shall be established elsewhere.

All positions under or in connection with the League, including the secretariat, shall be open equally to men and women.

Representatives of the members of the League and officials of the League when engaged on the business of the League shall enjoy diplomatic privileges and immunities.

The buildings and other property occupied by the League or its officials or by representatives attending its meetings shall be inviolable.

Article 8.—The members of the League recognize that the maintenance of peace requires the reduction of national armaments to the lowest point consistent with national safety and the enforcement by common action of international obligations.

The council, taking account of the geographical situation and circumstances of each State, shall formulate plans for such reduction for the consideration and action of the several Governments.

Such plans shall be subject to reconsideration and revision at least every ten years.

After these plans shall have been adopted by the several Governments, the limits of armaments therein fixed shall not be exceeded without the concurrence of the council.

The members of the League agree that the manufacture by private enterprise of munitions and implements of war is open to grave objections. The council shall advise how the evil effects attendant upon such manufacture can be prevented, due regard being had to the necessities of those members of the League which

are not able to manufacture the munitions and implements of war necessary for their safety.

The members of the League undertake to interchange full and frank information as to the scale of their armaments, their military and naval programs and the condition of such of their industries as are adaptable to warlike purposes.

Article 9.—A permanent commission shall be constituted to advise the council on the execution of the provisions of Articles 1 and 8 and on military and naval questions generally.

Article 10.—The members of the League undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all members of the League. In case of any such aggression or in case of any threat or danger of such aggression the council shall advise upon the means by which this obligation shall be fulfilled.

Article 11.—Any war or threat of war, whether immediately affecting any of the members of the League or not, is hereby declared a matter of concern to the whole League, and the League shall take any action that may be deemed wise and effectual to safeguard the peace of nations. In case any such emergency should arise the Secretary General shall on the request of any member of the League forthwith summon a meeting of the council.

It is also declared to be the friendly right of each member of the League to bring to the attention of the assembly or of the council any circumstance whatever affecting international relations which threatens to disturb international peace or the good understanding between nations upon which peace depends.

Article 12.—The members of the League agree that if there should arise between them any dispute likely to lead to a rupture, they will submit the matter either to arbitration or to inquiry by the council, and they agree in no case to resort to war until three months after the award by the arbitrators or the report by the council.

In any case under this article the award of the arbitrators shall be made within a reasonable time, and the report of the council shall be made within six months after the submission of the dispute.

Article 13.—The members of the League agree that whenever

any dispute shall arise between them which they recognize to be suitable for submission to arbitration and which cannot be satisfactorily settled by diplomacy, they will submit the whole subject-matter to arbitration.

Disputes as to the interpretation of a treaty, as to any question of international law, as to the existence of any fact which if established would constitute a breach of any international obligation, or as to the extent and nature of the reparation to be made for any such breach, are declared to be among those which are generally suitable for submission to arbitration.

For the consideration of any such dispute the Court of Arbitration to which the case is referred shall be the court agreed on by the parties to the dispute or stipulated in any convention existing between them.

The members of the League agree that they will carry out in full good faith any award that may be rendered, and that they will not resort to war against a member of the League which complies therewith. In the event of any failure to carry out such an award, the council shall propose what steps should be taken to give effect thereto.

Article 14.—The council shall formulate and submit to the members of the League for adoption plans for the establishment of a Permanent Court of International Justice. The court shall be competent to hear and determine any dispute of an international character which the parties thereto submit to it. The court may also give an advisory opinion upon any dispute or question referred to it by the council or by the assembly.

Article 15.—If there should arise between members of the League any dispute likely to lead to a rupture, which is not submitted to arbitration in accordance with Article 13, the members of the League agree that they will submit the matter to the council. Any party to the dispute may effect such submission by giving notice of the existence of the dispute to the Secretary General, who will make all necessary arrangements for a full investigation and consideration thereof.

For this purpose the parties to the dispute will communicate to the Secretary General, as promptly as possible, statements of their case with all the relevant facts and papers, and the council may forthwith direct the publication thereof.

The council shall endeavor to effect a settlement of the dispute, and if such efforts are successful, a statement shall be made public giving such facts and explanations regarding the dispute and the terms of settlement thereof as the council may deem appropriate.

If the dispute is not thus settled, the council either unanimously or by a majority vote shall make and publish a report containing a statement of the facts of the dispute and the recommendations which are deemed just and proper in regard thereto.

Any member of the League represented on the council may make a statement of the facts of the dispute and of its conclusions regarding the same.

If a report by the council is unanimously agreed to by the members thereof other than the representatives of one or more of the parties to the dispute, the members of the League agree that they will not go to war with any party to the dispute which complies with the recommendations of the report.

If the council fails to reach a report which is unanimously agreed to by the members thereof, other than the representatives of one or more of the partis to the dispute, the members of the League reserve to themselves the right to take such action as they shall consider necessary for the maintenance of right and justice.

If the dispute between the parties is claimed by one of them, and is found by the council to arise out of a matter which by international law is solely within the domestic jurisdiction of that party, the council shall so report, and shall make no recommendation as to its settlement.

The council may in any case under this article refer the dispute to the assembly. The dispute shall be so referred at the request of either party to the dispute, provided that such request be made within fourteen days after the submission of the dispute to the council.

In any case referred to the assembly all the provisions of this article and of Article 12 relating to the action and powers of the council shall apply to the action and powers of the assembly, provided that a report made by the assembly, if concurred in by the representatives of those members of the League represented on the council and of a majority of the other members of the League, exclusive in each case of the representatives of the parties to the

dispute, shall have the same force as a report by the council concurred in by all the members thereof other than the representatives of one or more of the parties to the dispute.

Article 16.—Should any member of the League resort to war in disregard of its covenants under Articles 12, 13 or 15, it shall *ipso facto* be deemed to have committed an act of war against all other members of the League, which hereby undertake immediately to subject it to the severance of all trade or financial relations, the prohibition of all intercourse between their nationals and the nationals of the covenant-breaking State, and the prevention of all financial, commercial or personal intercourse between the nationals of the covenant-breaking State and the nationals of any other State, whether a member of the League or not.

It shall be the duty of the council in such case to recommend to the several Governments concerned what effective military, naval or air force the members of the League shall severally contribute to the armed forces to be used to protect the covenants of the League.

The members of the League agree, further, that they will mutually support one another in the financial and economic measures which are taken under this article, in order to minimize the loss and inconvenience resulting from the above measures, and that they will mutually support one another in resisting any special measures aimed at one of their number by the covenant-breaking State, and that they will take the necessary steps to afford passage through their territory to the forces of any of the members of the League which are co-operating to protect the covenants of the League.

Any member of the League which has violated any covenant of the League may be declared to be no longer a member of the League by a vote of the council concurred in by the representatives of all the other members of the League represented thereon.

Article 17.—In the event of a dispute between a member of the League and a State which is not a member of the League, or between States not members of the League, the State or States not members of the League shall be invited to accept the obligations of membership in the League for the purposes of such dispute, upon such conditions as the council may deem just. If such invitation is accepted, the provisions of Articles 12 to 16 inclusive

shall be applied with such modifications as may be deemed necessary by the council.

Upon such invitation being given the council shall immediately institute an inquiry into the circumstances of the dispute and recommend such action as may seem best and most effectual in the circumstances.

If a State so invited shall refuse to accept the obligations of membership in the League for the purposes of such dispute, and shall resort to war against a member of the League, the provisions of Article 16 shall be applicable as against the State taking such action.

If both parties to the dispute when so invited refuse to accept the obligations of membership in the League for the purposes of such dispute, the council may take such measures and make such recommendations as will prevent hostilities and will result in the settlement of the dispute.

Article 18.—Every treaty or international engagement entered into hereafter by any member of the League shall be forthwith registered with the Secretariat and shall as soon as possible be published by it. No such treaty or international engagement shall be binding until so registered.

Article 19.—The assembly may from time to time advise the reconsideration by members of the League of treaties which have become inapplicable and the consideration of international conditions whose continuance might endanger the peace of the world.

Article 20.—The members of the League severally agree that this covenant is accepted as abrogating all obligations or understandings *inter se* which are inconsistent with the terms thereof, and solemnly undertake that they will not hereafter enter into any engagements inconsistent with the terms thereof.

In case any member of the League shall, before becoming a member of the League, have undertaken any obligations inconsistent with the terms of this covenant, it shall be the duty of such member to take immediate steps to procure its release from such obligations.

Article 21.—Nothing in this covenant shall be deemed to affect the validity of international engagements, such as treaties of arbitration or regional understandings like the Monroe Doctrine, for securing the maintenance of peace.

Article 22.—To those colonies and territories which as a consequence of the late war have ceased to be under the sovereignty of the States which formerly governed them and which are inhabitd by peoples not yet able to stand by themselves under the strenuous conditions of the modern world, there should be applied the principle that the well-being and development of such peoples form a sacred trust of civilization and that securities for the performance of this trust should be embodied in this covenant.

The best method of giving practical effect to this principle is that the tutelage of such peoples should be intrusted to advanced nations who by reason of their resources, their experience or their geographical position can best undertake this responsibility, and who are willing to accept it, and that this tutelage should be exercised by them as mandataries on behalf of the League.

The character of the mandate must differ according to the stage of the development of the people, the geographical situation of the territory, its economic conditions and other similar circumstances.

Certain communities formerly belonging to the Turkish Empire have reached a stage of development where their existence as independent nations can be provisionally recognized subject to the rendering of administrative advice and assistance by a mandatary until such time as they are able to stand alone. The wishes of these communities must be a principal consideration in the selection of the mandatary.

Other peoples, especially those of Central Africa, are at such a stage that the mandatary must be responsible for the administration of the territory under conditions which will guarantee freedom of conscience and religion, subject only to the maintenance of public order and morals, the prohibition of abuses such as the slave trade, the arms traffic and the liquor traffic, and the prevention of the establishment of fortifications or military and naval bases and of military training of the natives for other than police purposes and the defense of territory, and will also secure equal opportunities for the trade and commerce of other members of the League.

There are territories, such as Southwest Africa and certain of the South Pacific islands, which, owing to the sparseness of their population or their small size, or their remoteness from the

centres of civilization; or their geographical contiguity to the territory of the mandatary, and other circumstances, can be best administered under the laws of the mandatary as integral portions of its territory, subject to the safeguards above mentioned in the interests of the indigenous population.

In every case of mandate the mandatary shall render to the council an annual report in reference to the territory committed to its charge.

The degree of authority, control or administration to be exercised by the mandatary shall, if not previously agreed upon by the members of the League, be explicitly defined in each case by the council.

A permanent commission shall be constituted to receive and examine the annual reports of the mandataries and to advise the council on all matters relating to the observance of the mandates.

Article 23.—Subject to and in accordance with the provisions of international conventions existing or hereafter to be agreed upon, the members of the League:

(a) will endeavor to secure and maintain fair and humane conditions of labor for men, women and children, both in their own countries and in all countries to which their commercial and industrial relations extend, and for that purpose will establish and maintain the necessary international organizations;

(b) undertake to secure just treatment of the native inhabitants of territories under their control;

(c) will intrust the League with the general supervision over the execution of agreements with regard to the traffic in women and children and the traffic in opium and other dangerous drugs;

(d) will intrust the League with the general supervision of the trade in arms and ammunition with the countries in which the control of this traffic is necessary in the common interest;

(e) will make provision to secure and maintain freedom of communications and of transit and equitable treatment for the commerce of all members of the League. In this connection the special necessities of the regions

devastated during the war of 1914–1918 shall be borne in mind;

(f) will endeavor to take steps in matters of international concern for the prevention and control of disease.

Article 24.—There shall be placed under the direction of the League all international bureaus already established by general treaties if the parties to such treaties consent. All such international bureaus and all commissions for the regulation of matters of international interest hereafter constituted shall be placed under the direction of the League.

In all matters of international interest which are regulated by general conventions but which are not placed under the control of international bureaus or commissions, the secretariat of the League shall, subject to the consent of the council and if desired by the parties, collect and distribute all relevant information and shall render any other assistance which may be necessary or desirable.

The council may include as part of the expenses of the secretariat the expenses of any bureau or commission which is placed under the direction of the League.

Article 25.—The members of the League agree to encourage and promote the establishment and co-operation of duly authorized voluntary national Red Cross organizations having as purposes the improvement of health, the prevention of disease and the mitigation of suffering throughout the world.

Article 26.—Amendments to this covenant will take effect when ratified by the members of the League whose representatives compose the council and by a majority of the members of the League whose representatives compose the assembly.

No such amendment shall bind any member of the League which signifies its dissent therefrom, but in that case it shall cease to be a member of the League.

Annex

I. Original members of the League of Nations signatories of the treaty of peace.

- United States of America.
- Belgium.
- Bolivia.
- Brazil.
- British Empire.
  - Canada.
  - Australia.
  - South Africa.
  - New Zealand.
  - India.
- China.
- Cuba.
- Ecuador.
- France.
- Greece.
- Guatemala.
- Haiti.
- Hejaz.
- Honduras.
- Italy.
- Japan.
- Liberia.
- Nicaragua.
- Panama.
- Peru.
- Poland.
- Portugal.
- Rumania.
- Serb-Croat-Slovene State.
- Siam.
- Czecho-Slovakia.
- Uruguay.

States invited to accede to the covenant.

- Argentine Republic.
- Chile.
- Colombia.
- Denmark.
- Netherlands.
- Norway.
- Paraguay.
- Persia.
- Salvador.
- Spain.
- Sweden.
- Switzerland.
- Venezuela.

II. First Secretary General of the League of Nations.
The Honorable Sir James Eric Drummond, K.C.M.G., C.B.

This is a transcript from the official record of the covenant of the League of Nations as promulgated at the Versailles Peace Conference and subject to ratification by the signatory powers.

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